

**ADVANCED
EDUCATIONAL
PSYCHOLOGY**

B. KUPPUSWAMY

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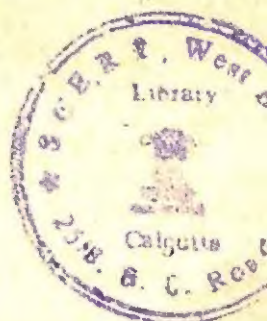
ADVANCED EDUCATIONAL PSYCHOLOGY



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PREFACE

The rapid advance in Secondary Education in the last two decades has led to a tremendous increase in the number of teacher's colleges in the country. This has resulted in the great need for those with the Master's Degree in Education. In the recent years many Universities have started the M.Ed. Courses. Consequently the need for text books and additional reading material for this level of teacher training is growing.

It is to meet this need that this book on "Advanced Educational Psychology" has been prepared. The work was undertaken by the late Prof. R.R. Kumria. He drew up the scheme and fixed up the contributors. In the middle of the work he passed away and the Publishers requested me to complete the task.

The first two chapters are introductory, the first giving the scope of Educational Psychology and the second a brief historical sketch of Educational Psychology in Ancient India. Next we have seven chapters: the third and the fourth deal with the nature and aspects of growth, the fifth and sixth with the problems of learning and the next three with the problems of Development.

The next part deals with the problem of individual differences, the growth and measurement of intelligence and educational measurement and evaluation in general. The next two chapters are devoted to the problems of backward child and the problems of the gifted child.

In the last section we have chapters on development and assessment of personality, psychoanalysis, group processes, mental hygiene, maladjusted children and the problem of discipline. The last chapter deals with the problems in connection with the educational and vocational guidance.

I am grateful to the various contributors for readily cooperating with me in completing this work. I thank them for patiently waiting for the publication of the book.

While going through the various contributions, I was pained to find that very little reference has been made to the work done in the country. Progress in scientific education implies that there is progress in scientific investigation. It is my fervent hope that when this book is to be revised the contributors will find more Indian investigations to include in the chapters.

It is my hope that this book will be found useful by the teachers as well as the students who take courses in Educational Psychology in the M. Ed., and M.A., classes in the various institutions. I am aware of the deficiencies in this, the first attempt. I hope the teachers who give these courses will offer their suggestions for making this book more useful.

New Delhi
2nd June 1964.

B. Kuppuswamy

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Part I

THE SCOPE OF EDUCATIONAL PSYCHOLOGY

THE IMPORTANCE OF PSYCHOLOGY FOR STUDENTS IN EDUCATION

It is a well known fact that the great Swiss educationist Pestalozzi was among the first few persons to emphasize that the mind of the pupil is a primary concern of the teacher. Since then other educationists have stressed the importance of the knowledge of child development, principles of learning and principles of mental hygiene, for improving one's work as a teacher. With the development and use of the experimental methods in psychology at the turn of the last century, several investigators have worked in the field of learning and memory the results of which have found a place in the general principles of education. It is now generally agreed that the education process must be based upon an accurate knowledge of child development as well as the principles of learning.

During the last 60 years our knowledge of child development increased considerably. It is necessary for the teacher to know with what innate endowment and equipment the new-born child starts its life, how the child develops in the various aspects of its behaviour like intelligence, sensory-motor development, language, thinking, etc., what effect the environment has on the development of the child and the growth of its character and personality.

One of the impressions, particularly with respect to teacher's training for the Secondary schools, is that a knowledge of child development is not necessary for that level. But this is an erroneous impression and the sooner this is eliminated the greater the fruitfulness of educational effort. The basic aim of education is to modify behaviour. Any modification of behaviour pre-supposes a knowledge of the development of behaviour.

A brief consideration of the relationship between education and psychology will be useful in the present context. Education is normative in its outlook, since it is concerned with aims, ideals, values and standards. On the other hand psychology is a positive science, trying to ascertain the facts of behaviour, how it develops and how it is modified. Thus psychology is to education what physics and chemistry are to engineering, and chemistry and biology are to medicine. While it is true that psychology cannot formulate the aim of education, it must be recognized that it can help us to find out whether a given aim is practicable and possible of achievement. In fact, as we shall see in another section, the school today is looked upon as a testing place of the knowledge gained by psychological research.

There is another important role which psychology plays with respect to education. It helps in the evaluation of the outcome of the educational process. It is true that any change in the form of examination is one of the most difficult tasks because our examination system has a long tradition behind it. But with the development of standardized achievement tests, the teacher today is in a better position to assess accurately and reliably to what extent the child has learnt.

The aim of educational psychology is to apply psychological principles in the interests of better teaching and better learning. These principles are drawn from various fields of psychology, particularly from the fields of learning, child and adolescent development, individual differences, social psychology and mental health. Yet another aim of educational psychology is to report the various studies undertaken in the field of education. These studies, particularly in the last half a century, have yielded many facts which are useful in the educational process. These studies have helped us to define educational objectives and to plan curriculum-content so that these objectives can be attained.

Investigations have also shown the existence of wide individual differences among the children at the pre-school age as well as in the school age and later. This has been of enormous significance to the teacher to understand why some react well and some do not in the school situation. This knowledge has helped in working out, in practicable ways, the adjustment of the instructional programme to these individual differences. These investigations have also given us considerable knowledge about how we learn. They have shown that there are individual differences with respect to readiness for learning. We may also refer to the way in which studies have shown that mental health and constructive social behaviour are very necessary not only for the individual's self-realization and social effectiveness but also with respect to his academic achievement. Yet another aspect stressed by these psychological investigations pertains to the way in which the teacher can strive to develop the constructive potentiality of each child as fully as possible. Further modern education is concerned now with the welfare of both the individual and the society. The aim of the school is to preserve and enhance the conditions of constructive living in society. To express in a brief way, all these trends have now made the modern school not only subject-centred but also child-centred and community-centred.

In the next section we can briefly survey the new ideals which have developed as a result of the investigations in psychology on the one hand and the great social change on the other hand.

THE INDIVIDUAL AND SOCIAL AIMS OF MODERN EDUCATION

In a broad way we can distinguish between two general aims of education viz., the social and the individual. Often the teachers look

upon the aim of education as merely communication of information or cultivation of a skill *e.g.*, the language teacher, either at the primary level or at the secondary level, looks upon his task as merely one of making the pupil to read and write and to find out if he has grasped the meaning of what he has read. It is true that the skills pertaining to language are very important and no person should be looked upon as an educated person if he does not master the skills. It is also true that we judge, particularly in the examination, the achievement of an individual on the basis of the understanding of what he has studied. But these should be considered as limited parts of the whole aim of education. This will become clear when we consider in detail the social as well as the individual goals of education.

As regards the social goals it must be realized that the aim of a school should be to continue the process of socialization started at home. This includes the transmission of the heritage both national as well as international, the transmission of skills as well as knowledge accumulated within the country and in the world as a whole to the succeeding generations. Each generation starts where the previous generation has left. It also involves helping the pupils in social adjustment, how to move with other persons of the same age as well as with persons who are older and those who are younger. All the various courtesies and methods of co-operation with others and methods of resolving social conflict have all to be taught in the life on the campus including the class room, the hostel, the play-ground etc. The pupils have also to be taught about the study habits and work habits so that later in life they adjust themselves to productive work. There is also the problem of right use of leisure ; people have to be taught about recreation so that leisure hours are also spent in a constructive way and not in a dissipating way. There is also the problem of citizenship. The schools as well as the colleges are agencies which help the pupils to become citizens not only of the village or of the state or the country but also of the world as a whole. There is a big contrast between the preparation for citizenship in the out-moded feudal society and that in the modern society. Today we are not trying to prepare pupils for sharply prescribed roles as was done in the ancient and medieval times and as it is being done even today in the villages through caste system. Our aim now is to develop the man's creative powers for constructive service in society. The aim is to develop the personality, *i.e.*, confidence, independence and versatility to meet the various situations in social, political and economic life. There is also the necessity to train the pupil for the leader-follower relationship. He must know where he can assume leadership and where he has to submit to leadership. In the traditional society all these problems of social adjustment were left for the person to pick up as he went along. But good modern schools develop programmes to help the pupils to develop the art of social adjustment and to retain versatility to adjust to new situations that continually confront an individual

who is living in a changing society. There is also the problem of transmission of the social ideals; the pupil in India must be taught the democratic ideals of freedom, equality, liberty and social justice. He must learn to respect every individual. Then there are the ideals which emanate out of technology and industrialization, whether on the farm or in a factory or in an office. There should be readiness to accept new inventions, new machines and new processes, in short, new ways of doing. There is also the problem of higher productivity and the aim of each individual to produce the maximum; all that he is capable of with economy and efficiency. Finally, there is the all-inclusive Indian Ideal of Sarvodaya, which involves the recognition of the worth of individuals irrespective of caste, colour, creed, wealth or education. We should promote true respect for every individual in society.

We can classify the social relations which an individual has to develop into two categories viz. (a) inter-personal relations and (b) group membership. Every individual is a member of the family and he has to develop relations with friends and co-workers. All these are intimate relations involving inter-personal contact. An individual has also to become a member of larger groups like the religious group or cultural group or political or economic group and so on. There is also the problem, as we have already indicated, of leadership in all these various groups. These two forms of social relations have their own problems as well as techniques. The school has to provide experience to the pupil to develop competence in these arts of social relations.

As regards individual goals, the pupil has to be helped in his self-development and in his self-realization. It is true that even an illiterate man may develop to be a person with confidence and competence. But in the modern society, it is very difficult for an illiterate man to develop these qualities. Further, in the school as well as in the college, experience gained may help an individual to have ideals of self-development and self-realization. One of the most important tasks of the teacher in the school as well as in the college is to promote a spirit of inquiry. An individual should not take for granted either his social traditions or the beliefs current in his group or the information communicated to him by other people or by mass media or by books. In other words, our aim should be to teach our pupils a spirit of questioning. So that they can arrive at their own decisions on the basis of the data which they have collected regarding the problem and their meditation regarding the consequences of their decision to themselves and to the society. To put it in a different way the school and college programmes should lead to the maximum intellectual growth of the individual.

It should also lead to the improvement as well as maintenance of physical and mental health. Long ago Patanjali, the author of the *Yoga-Sutras*, indicated how the maintenance of the physical and

mental health is a pre-requisite for self-development and self-realization. It is true that in the olden days this problem of physical and mental health was tackled within the family; the necessary habits were cultivated by an individual because of the behaviour of parents and others at home. The situation today is quite different. Our pupils are not coming from only the well-educated families, since the aim of universal elementary education is to draw the pupils from all the homes in the country—rural and urban; educated or uneducated. The main burden of improving the habits which promote physical and mental health thus falls on the school and the teacher.

The pupils should also be taught skills of communication so that through speaking and writing they can indicate their ideas to other persons whom they meet as well as to the larger groups through mass media or books. There is also the problem of self-development through the art of discussion and the art of writing. Few pupils today have competence in these skills and that is why they are not able to enhance either their self or the society.

There is also the problem of economic efficiency. He should develop the right attitude towards work so that he strives to fulfil the task which he has undertaken to do. He must also develop the right type of relation with the people with whom he works: his superiors, his peers and his inferiors. Quite a good deal of mental ill-health and inefficiency arises because of lack in the social skills. A person is not only the producer of goods or services but he is also the consumer of goods and services. So he must know how to utilize his opportunities and have discrimination in the utilization of goods and services which are available. Conspicuous consumption leads both to the degeneration of the individual and the society. The ancient Indian tradition of simplicity in the midst of luxuries and the combination of simple living and high thinking are values to be cultivated. A keen desire to develop his aptitudes and abilities should be inculcated so that an individual becomes a good as well as an efficient member of the society. This will be the first step leading him along on the path of self-development and self-realization.

THE EDUCATIVE ACT

In a broad way we can distinguish three aspects in the educative act, viz., (a) formulation of education objectives, (b) organisation of the learning experience and (c) evaluation of the learning experience. We can now see the way in which the knowledge of psychology helps the educationists to fulfil these three tasks involved in the educative act.

(a) Formulation of Education Objectives.

Educational theory as well as the experimental work in the field of psychology has shown that a clear formulation of the educational goal will help in developing the necessary programmes to

reach these goals. It must, however, be clearly recognized that psychology by itself can never determine the educational goals to be set. This is really a matter for the educationists in the light of social heritage, on the one hand, and the current social needs as well as the image of the future, on the other. Still, it must be recognized that these educational goals have to be formulated in the light of knowledge we have regarding the various stages of child development. It is here that knowledge of psychology will help education. Further, the facts ascertained regarding individual differences have clearly shown that in the mentally retarded children the educational goals have to be set in the light of their low abilities.

(b) Organisation of learning experience.

Once the objectives have been formulated the teacher has the task of organizing the learning environment so that he can produce in his pupil the specified changes set out in the formulation. This involves that the teacher should integrate what he knows about child development and about learning process and create the necessary experience. He has to use the curriculum, the text book, the audio-visual aids, the pupil activity and so on; all these have to be organized so that the environment will promote the learning of new behaviour. From the point of view of psychology, learning involves three functions, viz., (a) to elicit the desired responses, (b) to reinforce and strengthen the responses so that they will occur with ease in future and (c) to extinguish inappropriate and undesirable responses. However, the teacher has to realize that every child enters the new learning experience with the accumulated facts of previous learning. He also has in him a complex integration of concepts and attitudes on the basis of which he will have to learn new ways of behaviour. Thus we might say that the task of organizing learning experiences is to bring about a reorganization of all these concepts and attitudes and motor responses, so that the pupil acquires new discriminations and differentiations and new modes of response so that a more comprehensive system of behaviour is set up.

However, we should not assume that arranging learning experiences will guarantee learning. If this is so, it may well be asked whether the educative act is merely a chance process. All that is implied is that an educational method is not a mechanical routine set of devices. In other words, an educative act is something dynamic involving teacher-pupil relationship on the one hand and the stimulus-response relationship on the other. Thus the teacher has to evaluate the pupil's readiness for learning the given task and his present status in learning, so that he can organize experiences in the best possible way.

As we have seen above the curriculum, the text-book, the audio-visual aids, etc., constitute the learning material. Curriculum must be such that it transmits the cultural heritage of the society concerned and

of the humanity as a whole. It has to take into account the achievements of the previous generations in language, craft, art, literature, mathematics, science and technology. All these have to be transmitted to the new generation so that each new generation can ride on the shoulders of the previous generation and be in a position to further enrich the cultural heritage. The curriculum has also to meet society's changing needs, otherwise it will be out of step with the present; e.g., the contemporary need in India as well as in the world, is for the development of science and technology so that there is expansion in productivity and improvement in meeting the needs of the society. The curriculum must also include the basic aspects of democratic living and international understanding.

One of the basic characteristics of a really educative person is his eagerness to learn, his desire to solve the new problems, which he faces, in a creative and an effective way. In other words, he must learn how to learn. The man who imagines that he has learnt everything will not fit into a modern society. Further, the curriculum must be so designed that it emphasizes the need for application of what is known to the new situations. Transfer can occur only when the meanings are properly emphasized and the inter-relationship between the concepts and skills are known. Finally, the teacher must make the concepts of science, social studies, art, etc., living concepts by making use of the resources of local environment. Learning, in the present context, is not a mere matter of accumulating information but achieving meaningfulness on the basis of the lived experience. This is where the teacher-guided excursions to the various institutions like the farm and the factory, the power station and the water works, the museum and the theatre, the market place and the park, become very valuable to enrich not only the experiences of children but their understanding.

The organization of the learning experiences thus should enable the pupil not only to acquire new ideas and information, but also new interests. It is on the basis of these that he can plan for a career for himself and prepare himself for that career. It also implies that a well educated person should know more about himself, his own aspirations and achievements, his own lacks as well as assets, so that he can adjust himself in the fields of home, work and society at large, to be a well adjusted and productive and progressive individual.

(c) *Evaluation of learning.*

In this third phase of educational act the teacher has to find out in a systematic way whether the expected and desired changes have in fact taken place in the behaviour of the pupils. Thus this process of evaluation is also a very complex one like the second process of organizing experiences. The traditional method of evaluation is the examination system. There is also the system of viva-voce and a good teacher may develop the systematic technique of

questioning at the end of each unit of work. He may give periodical tests in order to evaluate the competence. There is also the annual examination and finally the public examination. It is true that people have been condemning this system of annual examination, since generally the response of the pupil is to prepare for only about a month before the examination. Thus it defeats its purpose since the stress is on immediate memory and information rather than on assimilation.

Psychology has contributed a good deal towards this aspect of the educational act by developing various kinds of new type tests, achievement tests, intelligence tests etc. These tests assess the intelligence of the individual and determine to what extent he has been able to master a given field of knowledge; besides being more objective these tests are standardized tests, which can be used at any time to test individuals who have reached a given stage of attainment.

In the main, evaluation helps not only to determine to what extent the pupil has learnt but also to determine the effectiveness of the organization of learning experiences and the effectiveness of the teacher himself. Experimental work has definitely established that a knowledge of results helps the pupil to put forth better efforts to learn. It is on the basis of these principles that the programme-teaching and teaching machines have now been developed. They also help the teacher to determine to what extent his teaching procedures can be or are satisfactory. From this point of view teaching procedures can be looked upon as hypotheses about learning and the evaluation technique helps to test these hypotheses. In the light of the evaluation, teaching procedures can be revised, so that the teaching becomes more effective. Finally, when the teacher looks upon evaluation from this angle he also improves himself and becomes a more competent man.

Mental testing movement has shown that there are individual differences in ability as well as in achievement. Studies have also shown that up to a point, difference in ability is very important in academic achievement. Investigations clearly demonstrate that the difference between the *over-achievers* and *under-achievers* is not so much in the realm of ability as in the realm of adjustment.

ROLE OF PSYCHOLOGY IN EDUCATION

Now we may briefly consider what the role of psychology is in the development of educational science and also in the practice of education. Long ago, Whitehead distinguished between a craft and a profession. A craft is based upon customary activities and it is modified by trial and error in the course of practice. On the other hand, a profession is one where the activities are subjected to theoretical analysis. Till recently education was more of an art, but within the last 100 years education has become a profession, in the sense, that new ideas are being generated either out of theoretical

conception or on the basis of previous research. While philosophy of education has helped in the theoretical analysis of the problems of education, educational psychology has also helped, particularly in the present century, in educational research. There is also the problem of historical studies in education. To give an illustration the various changes that have taken place in the college education in India have been very haphazard because of a lack of studies in all these three aspects viz, theoretical analysis, research work and historical analysis. Most of the thinking underlying proposals for educational modification is based upon dissatisfaction and hopes rather than upon an analysis of the historical or the theoretical aspects. Pre-university course, for example, was introduced replacing F. A., course; later on it was replaced by intermediate course and now again it is being replaced by pre-university course. Similarly, the pattern of the two or three year bachelor course consists of various kinds of combinations of a number of courses. While one university abandons three paper, three optional group, at the same time, another university adopts this.

For education to become a science it is necessary that there should be new ways of viewing the activities that compose it. New concepts and new theories will help us to give meaning to these activities. It is here we find that educational psychology plays a very important part in the analysis of the processes underlying education. To give a few illustrations, we may consider the way in which Thorndike's theory of learning based on experimental work and later on Kohler's theory of learning based on his experimental work have brought about very big changes in educational theory. Similarly, as we have seen briefly in the previous section, mental test movement as well as personality tests have contributed a great deal. Experimental work has tried to disentangle the complicated problem of the relationship between heredity and environment.

We may say that psychology contributes to the development of the teacher by providing him with a set of concepts and principles that will enable him not only to understand human behaviour, but also to study human behaviour in a more critical way. Psychology helps the teacher to know about the common aspects among his pupils like perception, learning, memory and so on. We also learn the way in which thinking and reasoning processes take place; then there is the problem of motivation and incentive and the way in which emotions and personality help or retard the processes of perception, learning, retention, thinking and so on. Secondly, psychology will help the teacher to know something about the unique aspect of each individual. Each pupil is unique in himself. He has got his own weaknesses and his own strengths. Thirdly, there is the basic problem of social behaviour. The school is a society in which the pupils react in different ways. Each pupil comes from a small social group viz., family and neighbourhood and goes on into a larger community. So the teacher has to know not only the problems

relating to another person's behaviour but also the problems relating to crowd behaviour and audience behaviour. The teacher also learns how to administer and to interpret intelligence tests, achievement tests and so on. Finally a course in psychology introduces the teacher to the elements of methods of research in human behaviour. As a science psychology assumes that human behaviour is lawful, that it is something which is predictable and can be explained. This view of human behaviour reveals many aspects. A poor reader *e.g.* may be working out his frustration by refusing to learn to read or he may be backward in learning how to read, because of the poverty of his experiential background. Frustration may lead to difficulties in learning. Even more important is the self-concept or the self-image which an individual has of himself which may affect education.

Among the most important developments in psychology which have affected education in the last two decades work in the fields of child development, group dynamics, mental health, measurement and evaluation may be mentioned. The aim of educational psychology is to develop and apply psychological principles so that there is better teaching and better learning.

The basic problems of how the children learn, why they learn, under what conditions they learn are discussed by educational psychology. It also deals with the all important problems of individual differences. It studies why some children do not want to learn or are unable to learn. We are dealing here not only with the basic problems of learning but also with the problems of individual differences connected with drives, attitudes, abilities, aptitudes and interests.

The important task of education is not merely to communicate information and help the pupil to master a number of facts but to make him learn, so that he becomes resourceful in meeting his problems and solving them, so that he can function effectively as a mature individual in a changing society.

BASIC PRINCIPLES OF BEHAVIOUR CHANGE

Experimental work has now shown that one of the basic principles of behaviour is that behaviour is motivated. Every action is based upon some need in the individual *e.g.* need for praise or the need for attention. In other words, an individual is in a state of tension and this tension is resolved by doing something. This behaviour change begins in a motivated state of the organism. Without such a need, there is no behaviour, there is no learning. Motivated behaviour is goal-seeking. There is a certain amount of dissatisfaction when an individual is in a state of tension. He realises that this tension can be reduced by some activity which helps him to reach the goal. There are different ways in which that goal can be reached and the individual may choose one of these different possible paths. Motivated behaviour consequently, is selective and is regulative because

the goal influences the behaviour undertaken to attain it. Thus an individual manipulates his behaviour in relation to the goal.

Behaviour is also determined by the abilities and aptitudes in the individual and also by the stage of his development. The same goal leads to different kinds of behaviour depending upon the stage of the development of the individual.

Behaviour also depends upon the environment which not only provides opportunity but also sets limits to it. Thus we find that problems of social organization like class and caste are very significant, probably more significant than the geographical aspects of environment or the economic aspects.

Behaviour is also influenced by the processes which take place within the organism. The individual retains the effects of his past experiences. These influence his present behaviour. There is also the other important aspect viz, the development of the attitudes. His past experiences not only provide information but also lead to the development of the attitudes towards the various aspects of the environment. There is also the important aspect of his self-concept or his image of himself which influences behaviour.

The concepts outlined above help us to analyse the behaviour of any individual in any context. One of the important problems for the teacher is to motivate his students to learn and this motivation depends upon the relation between the needs, the self-image and the environment. Thus the teacher can manipulate either the environment or his self-image in order to arouse certain needs in the student and thereby motivate him to learn.

EXPERIMENTAL OUTLOOK

Probably the most important service which educational psychology has rendered to education is the inculcation of experimental outlook among the educationists. It helps to formulate problems and to solve them experimentally. We have already seen that we can look upon teaching procedures as hypotheses about learning. Thus when a teacher organizes a certain type of experiences, he is making a prediction that this particular organization of learning experiences will produce certain kinds of changes in the behaviour of the pupils. This helps the teacher to look upon the course designed as one of the several possible ways of organizing the learning experiences. Instead of revising his procedures purely on a trial and error manner, he can design the experiments to collect necessary data and then arrive at a conclusion. It is in this manner that education can develop to be a science and new ideas can be generated on the basis of previous research.

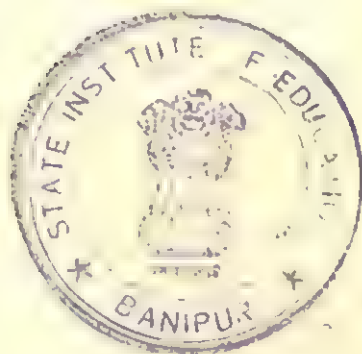
The aim of science is to relate one set of observable events with another set of observable events. The behaviour that we want to study is referred to as a dependent variable, while the factors that are related to this behaviour and on the basis of which we can explain or predict a given behaviour are called the independent variables. There are also mediating variables ; for example, let us suppose that we are studying the child's reading ability we can use several tests to measure his reading ability. If our aim is to account for differences in reading ability then we will try to find out the relationship between this reading ability and several other factors like intelligence or visual acuity or attitude to school or home conditions or type of the books used and so on. Here the behaviour under study viz. reading ability, is a dependent variable. Factors like heredity, age, sex, intelligence and so on are objective properties of the organism itself. Then there are factors like the need for approval or the need for food etc. Next there are the properties that stimulate the students, like the size of the book, the number of lines on the page, the size of the types and so on. All these are independent variables. Then we have the attitudes of the individual towards the school, the teacher, towards reading and so on. Similarly there is the individual's self image, his perception of his aims and his relationship to his society and to the world at large. All these may be termed mediating variables. The aim of research is to determine the factors which are most highly related to the particular behaviour of the child.

In the present century as a result of the experimental outlook in education we have made considerable progress. The credit for this may be attributed to the big change that came to psychology as a discipline as a result of the utilization of experimental methods in the last century. It is true that it is not possible to solve all the problems of education by using the experimental methodology. It must be recognized that an objective outlook of trying to gather facts in order to come to a conclusion is very helpful. There are several problems in education which are amenable to objective study. The aim of a course in educational psychology is to introduce the educationists to these methods.

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EDUCATIONAL PSYCHOLOGY IN ANCIENT INDIA

Ancient Indian teachers applied some psychological principles in educating the young learners from pre-school age to adolescence. It is proposed to discuss here, in brief, these psychological principles before tracing their application to the teaching process.

The *Uvasagadasao*, the Jaina treatise, describes the following eight stages of human life each with a characteristic of its own: *manda-bhumi* or dull-stage, *khidda-bhumi* or playful-stage, *vimamsa-bhumi* or experimental-stage, *ujugata-bhumi* or erect-stage, *sekha-bhumi* or learning-stage, *samana-bhumi* or ascetic-stage, *jina-bhumi* or jina-stage, and *punna-bhumi* or prostrate-stage. Nilakantha, the famous commentator of the *Mahabharata* speaks of ten stages of human life as follows: the embryonic stage, the birth, the infancy, the childhood, the boyhood, the early adolescence, the adolescence, the middle age, the old age and death.

The *Uvasagadasao* tells us how a child remains inactive for a period of seven days from its birth. Its sense organs remain inert and it does not respond to external stimuli. This is the dull-stage. The *Nyayasutra* also tells us how a new born infant is utterly helpless in the performance of any act after it is born of the mother's womb. According to the *Adipurana* the sense organs of the new-born baby remain inert. Gotama in his *Nyayasutra* tells us that a new-born baby expresses joy, fear and sorrow though its sense organs are not functioning. Charaka, the famous physician of the first century A.D. is of opinion that the new-born baby acts instinctively such as the sucking of mother's breast. It also expresses joy and fear. Emotions of joy and fear must be expressed in the playful-stage. The *Aitareya Brahmana*, however, holds the view that the sense of hearing functions properly during this stage.

In the playful-stage the sense organs of the growing child begin to function properly when it responds to light, sound and music. During this period the child is physically active, indicative of motor activity. *Anguttaranikaya* or the Book of the Gradual Sayings, a Buddhist text, tells us of the ripening of the sense-faculties with the physical growth of the growing child. The *Nighantu* and the *Nirukta* mention the attempts of the child for free movements during the period of physical growth and motor development. The *Aitareya Brahmana* supports the same view. From the above views it is evident that the child had to wait for physical growth and motor

development to gather strength for free movements and walking. In the third stage the child learns to walk with the help of parents and other surrounding objects. In this stage the child attempts to walk after repeated failures. Hence this period of the child's growth is called experimental stage. During this period, it attempts to speak. It is evident from the *Chandyogyopanisad* and the *Aitareya Brahmana* that speech development in a growing child coincides with its physical growth and motor development. It learns to talk when it learns to walk. Kalidasa tells us in his *Raghuvamsam* about the speech development of the young prince, Raghu, who learns to walk and to speak under the careful guidance of the nurse. Both the *Adipurana* and the *Avadanakalpalata* refer to the development of speech in a growing child. In the next stage of physical growth the motor activity continues with unabated vigour when the child grows restless and it is rather a difficult task for the nurse to control her ward. During this period, it stands on its legs unaided. The *Uvasagadasao* calls it the erect stage, the fourth stage of human growth. Hemacandra, the great Jaina scholar of the twelfth century A. D., tells us in his *Trisastisalakupurusacaritra* of the physical restlessness of the growing child. During this period 'cruelty' trait appears in the growing child when he takes pleasure in harassing birds and harmless animals. Kalidasa tells us in the last act of his drama, *Sakuntala*, how Sarvadamana, the son of Sakuntala tormented the cub of the lioness in the hermitage of sage Atri to force open its mouth for counting its teeth. Here the spiritual atmosphere in the holy hermitage could not inhibit the 'cruelty' trait of the growing child. In the next stage of physical growth the child upon reaching boyhood shows cruelty to others, including brothers and sisters. We learn from the *Mahabharata* how Bhima was cruel to his cousins. Fighting tendency is also manifest in children during this period. It is evident from the record of Kalhana Misra in his *Rajatarangini* that the children of the aristocracy, particularly of the royal family, take delight in associating with the brave and shun the company of the mean and lowly.

Children upon reaching their boyhood imitate adult occupations in games. They constantly change their sportive occupations. Sometimes they imitate adult occupations related to the lower and the higher needs of life. This is evident from Hemacandra's *Sthaviravalicaritra* and Kalhana Misra's *Rajatarangini*. During this stage girls also freely play with boys. In their games boys and girls sometime show violence. This is recorded by Kavi Karnapurna in his *Anandavrndavana-campuh* while describing the sports of Krsna with his companions. It is evident from our discussion that the motor activity of the experimental stage, is continued with full vigour in the erect stage when physical restlessness and the cruelty trait are manifest. During this stage children rehearse adult occupations which they constantly change.

In the learning stage physical and mental growth of educands is accelerated. According to Sukracarya the physical growth of the young learner after the fifth year is rapid. This stage is described by the *Uvasagāṇṣao* as the learning stage when young learners commence the learning of arts. During this period they are inquisitive for facts which prompt them for asking a volley of questions. This is evident from the *Chandyogyopanisad*. It is a difficult task even for learned adults to satisfy their hunger for facts. We learn from the *Garuda Puṇanam* that a young learner commences his education at the age of five under the careful guidance of his preceptor which continues for ten years. Mallinatha in his commentary on Kalidasa's *Raghuvamsam* recommends the commencement of formal education of a child at the age of five. Kautilya in his *Arthasastra* recommends the early initiation of the child into the mysteries of *lipi* or alphabet after the performance of *cudakarana* or the ceremony of cutting the hair at the age of three. Some Jaina as well as Buddhist authorities recommend the beginning of education at the age of eight.

In addition to anger and cruelty, emotions of wonder, fear, laughter, heroism and sorrow, are evident in young learners which they express in their hunting excursions when chasing wild game. These emotions are enumerated by Raja Rudradeva of Kumaon in his *Syainika Sastra*. These emotions gradually develop in young adolescents from their boyhood. The romantic legend of Sakya Budha tells us of the adolescents' love for hunting excursions. We learn from the above source how prince Siddhartha in his boyhood and early adolescence took keen interest in hunting, and riding. Adolescents also feel for the suffering humanity. We learn from the same source how the prince, while out in the Kan-Ku garden in the suburb of Kapilavastu for excursions, cried aloud in lamentations at the sight of hardship of the agriculturists while working in their fields. Asvaghosa in his *Saundarananda* tells us that this emotional trait is innate in human beings which manifests itself in early adolescence at the sight of distress in others.

Along with physical growth there is also growth of intelligence. We learn from the *Chandyogyopanisad* that the intelligence of man is not developed in his infancy. In infancy the mind is not developed and its latent power manifests itself in adolescence. We learn from Hemacandra's *Trisastisalaka-purusacaritra* and Jaina *Sutras* that intelligence, lying dormant in man in his infancy, grows gradually and steadily in his adolescence when it reaches maturity. Intelligence does not grow at the same rate in all persons. Some persons remain children in intelligence in their advanced age owing to the arrested development of their native abilities. This psychological truth is recorded in the *Mandukyopanisad*. It is evident from our discussion that human beings from their birth are a mere bundle of instincts and they act instinctively. Gradually with their physical growth, their sensory organs begin to function. In the next stage of their physical

growth their motor activities begin to function when they begin to speak and make movements. In the further stage of physical growth their instincts, emotions, memory develop. The growth and development of intelligence goes side by side.

Adolescent girls differ from boys in their physical characteristics and emotions. The physical growth of the girls in adolescence is gradual and symmetrical. During this period love for the same sex and opposite sex is manifested in them. This emotional trait is recorded in Sanskrit literature—religious as well as secular. The Jaina and Buddhist literatures abound with references to this trait of adolescents. We learn from Kalidasa's *Sakuntala* how the three hermit girls—Sakuntala, Priyamvada, and Anasuya were in deep love with one another and how out of love for Sakuntala, the two friends helped her in her romance with king Dusyanta. This erotic love is so strong in adolescents that it crops up in them even though they are raised in a hermitage where religious atmosphere permeates. *Hasya rasa* or wit and humour characterise the conversations of adolescent girls as is evident from Kalidasa's *Sakuntala*. They also show their love towards nature. Thus Sakuntala out of love for the garden plants used to water them. Parvati also showed her maternal love for the forest deer. Adolescent girls manifest their gregarious tendency and love for excursions into gardens and places of interest. This is evident from Rajasekhara Suri's *Pravandhakosa*. Adolescent girls, educated or illiterate, display their love for the moon.

Male adolescents display their love toward the members of their own sex as well as the other sex. We learn from the romantic legend of the Sakya Buddha how Sariputra and Moggallana, the principal disciples of Lord Buddha, were in deep love with each other in their adolescence and organized excursions in a neighbouring garden with their female companions. Adolescents' deportments of such a nature are recorded in the *Vinayapitakam* and in the 'Manual of Buddhism.' Their love has its flood-tide and ebb tide. It is unsteady. Criminal traits are manifest in some adolescents, irrespective of their social rank. This is recorded in the 'Legends of Buddhism' and *Kathasaritsagara*. Social and religious traits are evident in some young adolescents. This is evident from the *Lalitavistara* and the *Adipurana*. Restlessness is inhibited by sobriety during this period. Social intelligence is developed in the adolescents of both the sexes. Mammata in his *Kavyaprakasa* holds the view that the luxury of youth teaches an adolescent girl grace and elegance. The sense of self-respect is developed in adolescents of both the sexes who are not only courteous but are also conscious of their social obligations. They are sympathetic to their fellow-citizens and try to mitigate the sufferings of the distressed even at the risk of their own life. This brief review shows that the physical and emotional traits of adolescents manifest gradually.

It is evident from our discussion how impulses and their concomitant emotions are manifest in adolescents of both sexes. These are called *rasas* by the Hindu authorities on *dramaturgy*. The former are known as *sthaiyī bhavas* or permanent states and the latter are known as *sāncari bhavas* or transitory states. Their influence on the development of character of adolescents were well known to educationists of ancient India who took special care to inhibit the undesirable impulses and emotions by rousing in them the desirable ones which were so useful for their development to be worthy members of the family and good citizens of the State in times of peace and war.

Rati or love, *hasya* or laughter, *soka* or grief, *krodha* or anger, *utsaha* or enthusiasm, *bhaya* or fear, *jugupsa* or disgust, and *vismaya* or wonder are the eight *sthaiyī bhavas* or dominant states enumerated by Bharata. According to the Hindu theory of *Rasa*, *rati* is the basis of parental love, fraternal love, conjugal love, and love for God. Thus, when parents love their children, erotic love is sublimated by parental love though prompted by *rati rasa* or sex instinct. Similarly, children's love for their parents is also prompted by *rati rasa*. Conjugal love is of course prompted by this *rasa* though it is sometimes sublimated in social or religious channels. Thus, it is evident that an individual maintains his relationship with members of his family, fellow-citizens, the ruler and God by the various manifestations of emotions, the basis of which is *rati rasa*.

Hasya or laughter and wit is classified into six types : *smīta* or gentle smile, *hasita* or smile, *vihasita* or gentle laughter, *upahasita* or laughter of derision, *apahasita* or vulgar laughter, and *atīhasita* or excessive laughter. These six types of laughter are grouped into three pairs. Persons of superior status use *smīta* and *hasita*, persons of middle status use *vihasita* and *upahasita*, and persons of inferior status use *apahasita* and *atīhasita*. Laughter is prompted both by contempt and joy. We learn from the *Bhagavad Gita* that Kṛṣṇa used *vihasita* when he heard the arguments of Arjuna for not fighting against his cousins when the latter saw them on the battle-field of *Kuruksetra*.

Soka or grief, though a *sthaiyī bhava* or dominant state, lies dormant in human mind. Women and persons of inferior status easily manifest it, whereas persons of superior and middle status learn to control it, says Bharata. However, Valmiki, the celebrated author of the *Ramayana*, tells us that Rama is affected by *soka* or grief. Kalidasa shows how sage Kanva burst into tears at the time of Śakuntala's taking leave of him.

Krodha or anger is roused in a person by external stimuli like insulting language, quarrel, and altercation. Generally persons of superior status are roused into rage when inferior persons do not

respect them. This dominant state generates *rudra rasa* or the emotion of fury.

Utsaha or enthusiasm is roused in superior persons by the absence of sadness. This dominant state rouses *vira rasa* or the emotion of heroism.

Bhaya or fear arises in women or inferior persons in the presence of their superiors. It is also caused by offending the superior persons like the king as well as by the presence of wild animals and harmful objects. *Bhayanaka rasa* rises from the dominant state of *bhaya* or fear.

Jugupsa or disgust is roused in inferior persons and women from ghastly sights and hearing tales of horror. This state rouses *vibhatsa rasa* or the emotion of odium.

Vismaya or wonder is expressed by persons at the sight of extraordinary feats of valour, paintings of unsurpassed skill and supernatural events. This dominant state rouses *adbhuta rasa* or the emotion of 'marvellous'.

In addition to the above *sthayi bhavas*, Bharata enumerates thirty one *sancari* or *vyabhicari bhavas* or transitory states as follows: *nirveda*, *glani*, *sanka*, *asuya*, *mada*, *srama*, *alasya*, *dainya*, *cinta*, *moha*, *smrti*, *dhrti*, *vrida*, *capalata*, *harsa*, *avega*, *jadata*, *visada*, *atsukya*, *nidra*, *apasmara*, *supta*, *vibodha*, *amarsa*, *avahittha*, *ugruta*, *mati*, *vyadhi*, *unmada*, *marana*, *trasa*, and *vitarka*.

Nirveda or the emotion of indifferent attitude to worldly objects such as honour, dishonour, worldly possessions or loss of them, and loss of dear and near ones. Under its influence a person maintains mental equilibrium by freeing the mind from undesirable emotions that might disturb it. Thus *moha* or attachment for honour and worldly possessions should be inhibited by the rousing of *santa rasa* or the mood of tranquility. *Karuna* or pathos for the loss of worldly possessions and dear and near ones is to be inhibited by sublimating *soka* or grief with the help of *santa rasa*.

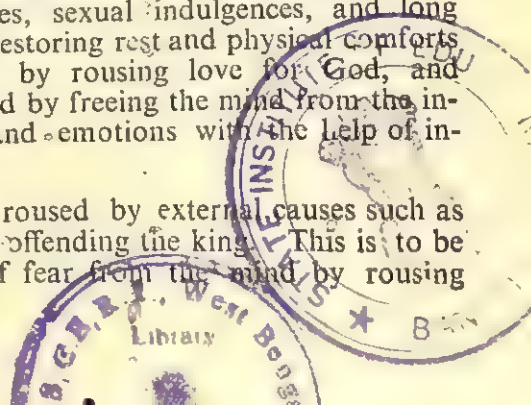
Glani or physical exhaustion is stimulated by physiological disorder, fasting, mental disturbances, sexual indulgences, and long journey. It is to be sublimated by restoring rest and physical comforts. Sex-urge is to be sublimated by rousing love for God, and mental worry is to be sublimated by freeing the mind from the influences of undesirable impulses and emotions with the help of intelligence.

Sanka or apprehension is roused by external causes such as theft or robbery, and the idea of offending the king. This is to be inhibited by removing the cause of fear from the mind by rousing

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joy in it. It can also be inhibited in the mind by rousing *vira rasa* or the mood of heroism.

Asuya or jealousy is caused by the prosperity and happiness of others. This is roused in the mind of the competitor suffering from defeatism or inferiority feeling. This emotion is to be eliminated by rousing in his mind *nirveda rasa* with the help of *santa rasa*.

Madā or intoxication is caused by drinking alcohol. As an emotion it arises from pride or self-conceit. It robs a person of his mental equilibrium as if he is intoxicated with drink. This emotion is to be eliminated by rousing in a person his *nirveda rasa* with the help of *santa rasa*.

Srama or physical exhaustion is roused in a person by excessive physical labour and long travel. This emotion is to be sublimated by rousing in a person his *utsaha* or enthusiasm.

Alasya or laziness is found in women or persons of inferior calibre caused by dislike for activity habits. This is to be inhibited by rousing *utsaha* or enthusiasm in an indolent person with the help of constantly developing active habits.

Dainya or humiliation is aroused in a person by poverty or grief or other agonies of the mind. This emotion is to be sublimated by rousing *nirveda rasa* with the help of *santa rasa*.

Cinta or worry is roused in a person by the loss or theft of wealth or a valued object and for not knowing the whereabouts of the lover or the beloved. This emotion can be sublimated by rousing *nirveda rasa* with the help of *santa rasa*.

Moha or the disturbance of mental equilibrium is caused by accident, misfortune, illness, fear, agitation and the like. This emotion is to be eliminated by rousing in the mind *nirveda rasa* with the help of *santa rasa*. *Moha* may also be interpreted as attachment for worldly objects, mundane possession, honour and the like.

Smṛti or recollection is aroused in a person by the sweet memory of the dear ones in their absence. Generally it is associated with the sweet memory of the absent lover or the beloved. It is a *vipralambha srngara rasa* or love for the absent lover or the beloved. Imagination plays a role in arousing this emotion which can be inhibited by *nirveda rasa* with the help of *santa rasa*.

Dhṛti or contentment is roused in a person when his mundane desires are adequately fulfilled. It also indicates the idea of having received adequate learning and spiritual wealth which help the learner to maintain mental equilibrium with the help of *nirveda* and *santa*

rasas. A person, with this emotion aroused in him, is possessed of heroism and is loyal to his duties and superiors. This emotion is essential for a good citizen to discharge his duties faithfully and creditably in times of peace and war.

Vrida or shame is aroused in a penitent person when he is conscious of his negligence in carrying out the orders of his superiors or the fulfilment of his vow. This emotion rouses a good many emotions of divergent nature when the mind oscillates. It can be eliminated from the mind by rousing *nirveda rasa* with the help of *santa rasa*.

Capalata' or fickleness is aroused in the mind of a person by divergent emotions like love, hatred, and jealousy which disturb the mental equilibrium. The mind can be released from the influence of fickleness by inhibiting these undesirable emotions with the help of *nirveda rasa* and *santa rasa*.

Harsa or joy is roused in a person when he realizes the cherished objects and meets his beloved. This emotion is stimulated by the instincts of acquisition and sex.

Avega or disturbance is roused in a person by omen, storms, rain-fall, outbreak of fire, good or bad news and the running of wild animals or elephants and misfortunes.

Jadata or stupor is roused in a person when he hears of the much coveted welcome news or the dreadful news. It is also roused by sickness when all physical activities have ceased. It is due to excessive joy or fear. It is to be inhibited by rousing *utsaha* or enthusiasm and *vira rasa* or heroism.

Garva or pride is roused in a person by the possession of wealth, noble birth, high position, youth and power. This emotion is also manifested in a person of position in the midst of inferiors. It can be inhibited by rousing *nirveda rasa* with the help of *santa rasa*.

Visada or depression is roused in a person for his failure to finish an assigned task. It is also roused in a person by an unexpected mishap. This emotion can be inhibited by rousing in him *nirveda rasa* and *santa rasa*.

Autsukya or curiosity is caused by separation from the dear ones and remembering them in their absence. It is also roused in a person by the sight of a garden, new sights and scenes. It can be sublimated by controlling the mind in the aforesaid manner.

Nidra or sleeping is caused by fatigue, lethargy, intoxication, excessive eating and thinking. It is also caused by physiological action. It can be inhibited by arousing *utsaha* with the help of will and correct habit formation.

Apasmara or possession is roused in a person when he is possessed by a demi-god or a spirit. Under their influence he remembers them and lives in a solitary house and observes no proper time and purity. Under the influence of this emotion the haunted person is not in his senses.

Supta or sleep : dream is aroused in a sleeping man when not enjoying sound sleep and in dream he enjoys sensory objects. Imagination also plays a part in arousing memories of sweet remembrances in the mind of the sleeping man. Sometimes a person dreams a dream of objects not thought of before. A dream is closely associated with the sweet memories of an absent lover or beloved. Hence it indicates *vipralambha srngara rasa*.

Vibodha or sudden wakening is aroused by the indigestion of food, dreams portending omen and by touch. *Vibodha* as an emotion constantly torments the mind of a love afflicted lover. It is associated with *vipralambhasrngara rasa*.

Amarsa or indignation is roused in a person when he is insulted by a person of superior status, possessed of scholarship, worldly possessions and authority. This emotion is also aroused in a person of position when he is spoken ill of by a person of inferior status. The great majority of the persons of high status and scholarship may not take seriously the adverse opinion of the man of a lower status in life. This emotion is stimulated by self-assertion.

Avahittha or dissimulation is roused in a person by shame, fear, defeat, and respect. Under its influence a person attempts to conceal his inner feelings arising from the aforesaid causes. He will try to inhibit in him this emotion by *nirveda rasa* with the help of *santa rasa*.

Ugrata or fury is roused in a person in the presence of a captive—robber ; when under the influence of this emotion he is cruel to them and belabours them. A king is also under the influence of fury when he is offended. This emotion is stimulated in a person by self-assertion in the presence of inferiors.

Mati or opinion is roused in a person by his love for the *sastras*, thinking about them as to their real significance. This emotion is roused in an ardent seeker of truth by his love for God prompted by the religious urge.

Vyadhi or disease is aroused in a person by physical illness and the disturbance of physiological functions. A person expresses sickness by the display of the looseness of the limbs, shooting them around and by facial expressions. These physical manifestations express the mental conditions and the inner feelings of a sick person.

Unmada or lunacy is caused by the death of dear ones, loss of worldly possessions, physical injury, and the loss of balance of mind. It arises when a person is overpowered by grief due to the death of a dear one. All these causes upset the mind of a person and he behaves like an insane.

Marana or death arises from illness and accident. It is quite appropriately associated with disappointment in romance when a lover or a beloved embraces death by committing suicide to be relieved from the pangs of separation. This emotion is roused in a lover or beloved when he or she cannot inhibit *sringara rasa* or erotic love by rousing *nirveda rasa* with the help of *santa rasa*.

Trasa or startling is roused in a person by an impending danger from the presence of enemies, wild animals, and natural phenomena such as lightning, thunder, earth-quake etc. This emotion is to be inhibited in a person by rousing in him his emotion of heroism, *nirveda rasa* or the indifferent attitude to the hostile elements with the help of *nirveda rasa*.

Vitarka or guessing is roused in a person by grief for not knowing the whereabouts of his beloved when his mind deliberates regarding her whereabouts. It also leads to jealousy and anger.

These emotions exert tremendous influence upon persons of both the sexes in their individual and social life. The real purpose of education in ancient India whether secular or religious was the control of the impulses and their concomitant emotions through repeated practices resulting in the steadiness of the mind. These impulses and emotions are controlled. *Viksipta* or oscillated and *mudha* or enamoured states of the mind, common among people in general, are controlled by this means.

These impulses and their concomitant emotions are stimulated by the external stimuli through sense-perceptions. According to Kapila the optical sense, auditory sense, tactual sense, gustatory sense, and olfactory sense are the gates of knowledge. According to other sources sense-organs are six in number, including the mind with its judgment. Sense-organs are specific in character, each carrying its own sensation through it. This view expressed in *Suvarna-Prabha* is shared by Gotama in his *Nyaya-Sutra*. Santaraksita holds the view that the six different sensations originating from six senses function simultaneously, though two sensations from a single sense cannot arise at the same time. The *Abhidhamma Pitaka* holds the view that it is possible for two sensations to arise simultaneously from two independent senses. From the Buddhist Logic it is evident that the six senses can function simultaneously. Kunda—Kunda Acarya, an eminent Jaina scholar upholds a different view. According to him senses of sight, hearing, touch, taste and smell do not function simultaneously because of the inability of

human mind to concentrate attention on diverse sensory objects at the same time. Each of the senses has a relative advantage over the other. Thus our knowledge of hot substance derived through the sense of touch has a decided advantage over the verbal knowledge derived through the auditory sense.

According to Susrūta, an eminent authority on the Hindu Medical science, the human organism is covered with a net-work of nerves which are of vital importance in the physiological functions of our body as well as in our mental life. These nerves have their roots branching out into different parts of the body helping in the physiological functions and mental life of the living organism. The following are the characteristics of sensations. They have extensity, volume or area. Sense activity is not confined to any particular part of our body but is diffused all over the organism by the specific sensory organ. Secondly, each sensation has its location. Thirdly, sensations have their magnitude or intensity conditioned by the external object or the stimulus. Finally, sensations have the property of specific quality, for each of the senses gives us a correct knowledge of the objects lying around us.

However sensations alone cannot give us a correct knowledge of the objects lying around us. Knowledge without perception is impossible. For the perfection of our knowledge—sensory and verbal, the mind must be active and the perception of things must be followed by imagination. Candrakīrti in his commentary upon Nāgārjuna's 'Treatise On Relativity' defines perception thus: "Sense-perception is not a knowledge about the senses; it is a knowledge about the objects of the sense." Gotama in his *Nyaya Sutra* tells us that when sensory knowledge of external objects becomes specific, and free from error, it is called perception. The sense-organs function properly when they give us a correct knowledge of the objects resulting in their recognition. Gotama classifies perceptions into five distinct categories such as visual perception, etc. Each sense organ has its own perception peculiar to it. Thus the acquisition of knowledge is possible through the contact of sense organs, with the sensory objects. Santaraksita holds a similar view. In addition to its specific nature sense-perceptions deal with the objects present before our senses. Bhavabhūti, an eighth century poet holds a similar view in his *Malati-Madhava*. Moreover, sense-organs are the seats of sense-perceptions though they change with every object.

According to Nemicandra Siddhanta Cakravarty *darsana* and *jñāna* are the two characteristics of *upayoga* or compact. Brahmadeva the commentator of *Davva-Samagaha* tells us that accurate knowledge of an object is not possible in the *darsana* stage when our knowledge is too general and imperfect. In the *jñāna* or the second stage of our knowledge we receive a detailed knowledge of an object. Nemicandra classifies *māti-jñāna* into four distinct stages as follows: *avagraha*, *iha*, *avaya*, and *dharana*. *Avagraha* gives us a knowledge

of an object when it is brought into contact with our sense organs. This contact stimulates our sense-organs resulting in our consciousness. In the *iha* or the second stage we receive a detailed knowledge of an object when we compare and contrast the object with other objects. In the *avaya* or the third stage we try to particularise specifically the details we desire to know in the second stage. In the *dharana* or the fourth stage we desire to have permanent impressions in our mind of the definite particulars of the objects, resulting in memory.

Perfect knowledge is dependent upon more than one sense-perception. Sense-perceptions have pedagogical significance. The *Tattarthadhigama sutra*, a Jaina scripture, classifies three distinct types of knowledge: *sruta* or scriptural knowledge is preceded by sensory knowledge and followed by verbal knowledge. Sensory knowledge precedes scriptural and verbal knowledge. The difference between the aforesaid types of knowledge lies in that the scriptural knowledge is to be associated with our previous experiences whereas in the case of the latter, words uttered or written are merely to be heard or seen. That is, *sruta* or scriptural knowledge deals with the past and the verbal knowledge deals with the present; and in both cases, the perceptions of hearing and sight assist us in deriving the desired knowledge. Verbal knowledge plays an important role in the education of a child and in that of the immature man. Non-verbal knowledge is derived from sense activities. Sense-perceptions play an important role in the education of learner, young or old, which we propose to discuss in the section on the psychological basis of education.

Sense perceptions alone cannot give us a correct knowledge; imagination also plays its role in the acquisition of knowledge. Asvaghōsa, an eminent Buddhist scholar of the first century A.D. tells us in his *Sauśīdananda* that the senses stick to their objects through imagination. He writes: "The senses, even though in activity, do not adhere to their objects, so long as imagination about the latter are not conceived in the mind." If the senses function through the intermediary of imagination, then, there must be as many types of imagination as the senses. Each sense must carry an image, peculiar to itself by coming into contact with the external stimulus. We learn from the *Mandukycapanisad* that imagination is the lasting cognition of things in the human mind, derived through sense organs. According to it, cognition and memory are important in imagination. Santaraksita in his *Tattvasamgraha* tells us how a person in an imaginary vision talks of something as if it were actually present before his eyes though really the thing is not there. The imaginary thing was not in existence before, and the qualities ascribed to it are all inventions of imagination. Though our sense organs are instrumental in giving us an image of things actually perceived yet in some cases the image undergoes modifications through subjective

interpretations. Images may, then, briefly be classified as genuine and creative.

Though originating in sensations, imagination sometimes leads us astray from realities resulting in illusion. A genuine image is a faithful copy of the thing perceived through the senses ; and when divorced from the reality, it results in illusion. Imagination is of importance in our mental and emotional life. Bhavabhuti tells us in his *Malati-Madhava* how men of superior intelligence and of rare genius possess rich imagination and ability for clear expression. The poet says, "Fertility of imagination, melody of expression, and richness of meaning, are the indications of learning and of genius. Imagination rouses love for suffering humanity as well as love for the absent lover or the beloved. Imagination rouses *vipralambha srngara rasa* in a hero or heroine when the whereabouts of the other are not known. Ancient educators of India realised the value of imagination in vocational and educational guidance of adolescents.

Not only in vocational and educational programmes but also in the method of teaching, imagination exerts tremendous influence. Vivid imagination stimulates spontaneous interest in young pupils for their study. Naturally, then, educators of ancient India resorted to story-telling as an aid to stimulate imagination in young learners for effective instruction. This is evident from the *Brahma-Sutras*.

Imagination is the basis of systematic thought, and the making of a plan. It is the basis of artistic expression. In meditation and *yogic* practices imagination influences the votaries in forming the image of God in the mind for its absorption in Him. Patanjali regards imagination to be the basis of dream and it helps us to remember what happened in the dream. Imagination is also the basis of memory. According to Madhusudana imagination is not only the basis of dreams but also of perceptions as a preliminary to self-consciousness.

Aryadeva regards memory as innate—an attribute of the soul. Memory is an asset in self-realization. It grows with the physical growth of human beings and declines in their old age. The Buddhist authorities hold similar views. Memory is the final result of the four stages of *mati-jnana*, already discussed.

Sensation, perception and imagination pave the way for memory. To repeat, memory is sustained by, and is dependent upon the four stages of *mati-jnana* or intellect. Sensation deals with the present objects or events and memory deals with the past objects and events. Memory is the basis of the operation of intelligence and its impairment results in the loss of the latter. Individuals differ from one another in their power of retention. It is evident from the *Yajnavalkya-Smrti*, that the *smrtin* or a person of good memory does not forget things once he has learnt them. The same view is stressed by Vidyapati Thakura in his

Purusapariksa. We retain a thing in our mind in a sub-conscious state and do not remember it all the time. *Dhammasangani*, the first book of the *Abhidhamma-Pitaka* gives the following reasons : "What is forgetfulness ? Unmindfulness, lapse of memory, non-recollection, non-remembrance, not bearing in mind, superficiality, oblivion." To ensure retention the *Aitareya Brahmana* recommends the study of the first and last portion of the lesson three times. It is evident from the Buddhist source that a succession of events rouses memory from its slumber. We learn from the *Bhasya* of Gotama's *Nyaya-Sutra* of four ways of developing memory. First, the mind must be focused upon the things to be remembered and their peculiarities are to be recalled. Secondly, recollection is to be facilitated in the mind by associating a chain of events in an arranging order resulting in recognition. Thirdly, the thing to be remembered is to be associated with some known facts or events. Fourth, the retentiveness of the mind is accelerated by recollection. Briefly speaking, attention, recollection, recognition, association, and repetition are the five laws of memory. Caraka, the famous Indian physician of the first century A.D. mentions eight conditions for the improvement of memory some of which are common with those enumerated by Gotama.

Memory is important in our mental life and is the source of our knowledge. It is also important in our social life. The importance of memory in education was recognised by the educationists of India who systematically developed it. Mind is looked upon as being in one of the following five conditions *ksipta* or agitated, *mudha* or infatuated, *aksipta* or scattered, *ekagra* or absorbed, and *nirodha* or inhibited. These conditions of the mind are due to its constant oscillation by impulses and emotions. In the fourth stage the mind is brought under control by the inhibition of the undesirable impulses and their concomitant emotions and in the final stage these are completely inhibited by rousing *nirveda rasa* or the emotion of indifference to worldly objects with the help of *santa rasa* or the mood of peace. These impulses and emotions so hostile to meditation are to be inhibited by constantly practising meditation with the performance of religious rites or other practices of concentration and thereby developing correct habits. In the *Bhagavad Gita*, Arjuna is advised by Krsna to control his mind through *abhyasa* or repeated practice. The control of mind is necessary for gaining knowledge, both secular and transcendental.

Intelligence has been variously defined by scholars of ancient India. Kautilya defines it as the ability for work. Visnusarma defines it as the power which enables human beings to control the world. Intelligence is hereditary and the sons inherit it from their father. The *Brahmasutra* tells us that intelligence is the gift of God and it is fixed at birth. Intelligence, though hereditary, is developed through proper diet. The *Agnipurana* prescribes diet for infants to help the growth of their intelligence.

Different adjectives are used for intelligence. The following may be mentioned as typical examples : *agadha buddhi* or intelligence that cannot be measured or superior intelligence, *alpa buddhi* or little intelligence, *asubha buddhi* or inauspicious intelligence, *dharma buddhi* or intelligence of pious import, *durdhiya* and *duṣprajna* or evil intelligence, *ista buddhi* or pious intellect, *karma buddhi* or practical intelligence, *durmati* or dullness, *maha buddhi* or great intelligence, *kubuddhi* or evil intelligence, *malina buddhi* or dull intellect, *manda dhi* and *manda buddhi* or dull men, *papamati* and *papa buddhi* or vicious intelligence *pratputpannamati* or presence of mind, *sista buddhi* or pious intellect, *sathavira buddhi* or ripe intelligence; *sthira buddhi* or calm intelligence, *sthitadhi* or steady intelligence; *sudurmati*, *sudurbuddhi*, and *sumandadhi* or unsurpassed dullness ; *udaradhi* or generous intelligence, *vakramati* or crooked intelligence, *vala buddhi* and *balamati* or the intelligence of a child or immature person; *visada buddhi* or sad intelligence i. e. intelligence which cannot inhibit grief but is overpowered by it, *visesavrtti* or special intellect, and *visista buddhi*, or special abilities. The *Atharva veda* asserts that Indra possessed hundred abilities.

Intelligence remains dormant in infancy. It grows gradually in the growing child reaching maturity in its adolescence. Its rate of growth, however, is not uniform in all children. The *Rgveda* mentions mental inequalities existing in different personalities. In some it reaches its maximum growth, in some, again, its growth is at a minimum and in others, its growth is arrested. The *Garuda Puranam* tells us of rare type of intelligence. The same source mentions three distinct types of people on the basis of levels of intelligence, such as superior, average and below the average. Gotama in his *Nyayasutra* supports this view. Jaimini in his *Purvaminamsa Sutra* recognises individual differences on the basis of abilities. The *Nirayavaliyao*, the eleventh Jaina canon tells us of four types of talent such as *autpattiki* or intuitive, *vainayiki* or disciplined, *karmaja* or talent acquired by practice, and *parinamiki* or talent reaching perfection in the maturity of age. Asvaghosa classifies human beings into four classes, on the basis of their intelligence, as follows : gifted, average, mediocre, and retarded.

Ancient Indian scholars differ in their opinion regarding the superiority of men to women in intelligence. Buddha claims the superiority of men to women. Narada holds the reverse view. Rajasekhara claims the equality of women with men in intelligence. According to him the apparent differences between the two sexes are due not so much to nature as to nurture. Sudraka regards women to possess native ability. Visnusarma regards them to be superior to men in some branches of the occult science specially known to *Usana* or *Vrhaspati*. Individuals differ in their abilities to master different branches of knowledge. This is referred to in the *Dharmasutra*.

We learn from Visnusarma's *Pancatantram* that superior intelligence is not fatigued or blunted by intense studies. Magha in his *Sisupalavadham* holds a similar view. Kautilya in his *Arthashastra* describes the characteristics of intelligence as follows : "Inquiry, hearing, perception, retention in memory, reflection, and steadfast adherence to the conclusions are the qualities of intelligence." Sharp intelligence may be improved. Retarded intelligence cannot be improved.

Educators of ancient India used to test the intelligence of persons through conversation, physical features, gestures, gait, speech, changes in the eye and facial expression. The *Garuda Puranam* mentions the discovery of intelligence from an observation of the facial expression of a person. Kautilya suggests the discovery of the intelligence of a man from his ability shown in work. Puzzles based upon everyday experiences were devised by the wise of ancient India to discover the intelligence of a man. *Udbhatasagara* lists many such puzzles.

Intelligence is affected by environment. A poor environment arrests the full development of superior intelligence. The association of the base exerts a similar influence upon a man of great intelligence. We learn from *vanaparva* of the *Mahabharata* how association influences the intelligence of a person. It reaches its perfection with the association with the best. It is developed upto the average standard by associating with persons of average intelligence and it is lowered in the company of the base. Here it is evident that sharp intelligence can be fully developed by associating with the wise and it may remain undeveloped in the association of persons of average or low intelligence. But under no circumstances dullness, fixed at birth, can be improved by the association of the wise. Kalhana Misra in his *Rajatarangini* tells us how native ability and social intelligence remain undeveloped in a poor environment. Not only intelligence but also character and conduct of a child are influenced by those of its parents during the gestation period.

Heredity and environment played a significant role in the selection of an applicant for study, especially philosophy. This enquiry regarding heredity and environment of a student, his native ability, disposition, morality, family purity and standard of living was conducted by experts, especially appointed for the purpose. This is evident from the record of "Indian travels of Apollonius of Tyana".

To ensure the birth of a healthy child special care was taken of expectant mothers. Special care was taken for the proper diet of the new-born baby. Bhavamisra in his *Bhavaprakasa*, Susruta in his *Samhita*, and the *Agnipuranam* recommend scientifically prepared diet for the new-born baby to ensure its healthy growth—physical and mental. Buddha and Asvaghosa also favour proper diet for a similar reason.

The infants, particularly of aristocracy, were properly dressed and were reared in a clean and purified chamber. Susruta recommends the massaging of the limbs of infants for physical growth and development. Mention is made in the *Rigveda* of the practice of massaging the limbs of the infants to ensure their healthy growth and physical vigour. Infants were allowed adequate sleep in the day time. They were also exposed to the rays of the rising sun in a garden for similar reasons. We learn from the *Dhammapada* commentary that pregnant women were given sun-bath for the birth of a healthy infant.

Both Susruta and Bhavamisra warn the parents against the rough handling of children. They hold the view that children should be amused and fondled with coloured toys and play-things. Playful activities ensure physical, emotional and mental growth of children. Caraka, the famous physician of the first century A.D prescribes toys of diverse colours, light and sound producing for stimulating sense-activities of children, especially the senses of sight, sound, and touch : the coloured toys stimulate the optical sense, the sound-producing toys the auditory sense, and the angular toys the tactual sense. Thus games with the above apparatus had in view the refinement of sensory organs of growing children. Constant mention is made of play-nurses to amuse the young infants and children. Their task was to keep children cheerful through playful activities and to teach them correct speech, manners and etiquette. This is evident from Kalidasa's *Raghuvamsam* wherein is mentioned how the young prince, Raghu learnt correct speech, etiquette, and manners of the royal family. The nurse accompanies the growing children in their out-door activities when they run about in the ecstasy of joy. The nurse is to be very active and alert in keeping company with sportive children. In their playful activities children learn counting through a trial and error method. Kalidasa tells us in his *Kumarasambhavam* how Kartikeya learnt counting by counting the teeth of the snake that coiled round the neck of the father. The poet tells us in the seventh act of *Sakuntala* how Sarvadamana, the son of the heroine, wrestled with the lion cub to force open its mouth to count the teeth. Thus, poet Kalidasa believes in the learning of the rudiments of arithmetic by children of their own accord in their playful activities. It is evident from the *Vinayapitakam* that games with letters were popular. Letters must be engraved in wooden blocks. Children used to learn alphabet through playful activities with their blocks. It is evident from the Buddhist source that prince Siddhartha displayed his thorough knowledge of scripts of various languages on the very day of his admission to the writing school of Visvamitra, who was surprised beyond measure to see the knowledge of the royal pupil in the various scripts. This shows that the children received thorough training in the three R's in the family under the careful guidance of play-nurses, appointed tutors and senior members of the family. It is evident from our brief description of the existence of play schools of children

of aristocracy resembling the modern kindergarten school where children were properly taken care of by nurses possessed of knowledge of various languages, child growth and sports.

In arithmetical counting the senses of sight, hearing, and touch play a significant role. It was the customary practice with young learners in ancient and mediaeval India to learn calculation from the *Milindapanho*. Nagarjuna, an eminent Buddhist monk, tells us of the practice of calculation using concrete objects. Kalidasa's belief in the learning of counting from concrete objects has already been mentioned.

The mastery of language is possible through the senses of sight, hearing, and touch. The latter plays a significant role in educating the blind. The teacher gives pattern reading of the *Vedas* before the students commence their study in right earnest. The pattern reading is followed by the pupils' attempt to grasp the word and its component parts, the letters—before grasping the entire sentence of the *Veda*. It is an analytic-synthetic method, based upon sense-perceptions arising from the senses of sight and sound. Kumarila Bhatta in his *Sloka-vartika* tells us of this method.

The senses of sight and touch play a significant role in communicating our thoughts to one another through signs. Vatsyayana calls this symbolic mode of communicating ideas as *aksara-mustika-kathanam* and considers it as one of the sixty-four arts. This mode of expression is now followed in schools for the deaf and dumb. In ancient India this science was extensively cultivated by scholars, monks, military men and spies. This hand language is mentioned in the *Ummagga Jataka*, *Abhinaya-Darpana*, and *Sisupalavadham*.

Scholars of ancient India not only applied psychology in the preparation of the curriculum but also utilised it in the teaching process. Imitation plays an important role in the learning of belles-letters and fine arts. Gotama in his *Nyayasutra* supports the view that imitation plays an important role in learning the above subjects. The growing child in his boyhood and early adolescence imitates the preceptor intelligently in acquiring knowledge. Kalidasa in his *Malavikagnimitram* tells us of the importance of learning the art of dancing by imitating the demonstrations of dancing poses given by the teacher. Repetition in the learning process is also stressed repeatedly in the texts—sacred or secular. The *Sabara Bhasya* recommends the repetition of useful things. Next in the learning process is attention. The pupil must fix his mind upon the teaching of his preceptor. According to Sri Sankaracarya attention is the fixing of the mind on some specific object. The *Chandyogyopanisad* tells us that the mind functions through the will which sets it on thinking and in speaking. Thinking is followed by reflection which is very important in our mental life, especially in grasping the import of the preceptor's teaching. According to the *Brahma-Sutra* meditation and reflection signify the rehearsing of the same thought

in mind. Meditation on a subject, according to this authority, indicates the remembrance of it without a break. Meditation and reflection signify the mental act. Reflection is possible only through the will. Reflection is impossible without fixing our thought upon previously known events. Reflection, then, is connected not only with recollection but also with association. In association we group several things in an order when we try to associate the things to be remembered with the series in order to recall the things to be remembered. Here memory or retentiveness plays a significant role. There is a clear evidence of it in the *Nyaya-Sutra* of Gotama. Educationists of ancient India assailed blind memory work. We have clear evidence of it in the *Mahabharata*, Buddhist literature and in the *Nirukta* of Yaska. According to Yaska sound and proper education should develop the reasoning power of the educand and not store his mind with bookish knowledge.

It is clear from our brief review that educators of ancient India were thoroughly conversant with various problems of behaviour and that they used sound psychological principles in the education of the growing child upto adolescence and post-adolescence. They also devised puzzles to discover general and specific abilities of the learner as a step to impart sound education to him.

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Part II

ANCIENT INDIAN VIEWS

Ancient Hindu thinkers referred to four broad factors that influence man's life and conduct : (i) *Desha* (place or region), (ii) *Kala* (time). (iii) *Shrama* (effort), and (iv) *Guna* (innate traits) (36). It is not necessary for us to take into account, at the present moment, the influence of the factors of place, time and innate traits. Ancient Indian thinkers developed the concept of *ashrama dharma* to indicate that the individual has four distinct stages in his growth in any society. "The whole of the life of an individual is, for the Hindu, a kind of schooling and self-discipline. Now, during the course of this schooling, he has to pass through four stages or four grades of training, called the *ashramas*. These *ashramas* are (i) *Brahmacharya*, that of a celibate student, (ii) *Grihastha*, that of a householder with a family and occupation, (iii) *Vana Prastha*, retiring from occupational and family responsibilities and (iv) *Sanyasa*, complete renunciation of worldly relations and attachments. "The word *ashrama* is originally derived from the Sanskrit root *shrama*, to exert oneself" (8).

In a broad way the different stages of development of an individual are indicated as follows :

(1) *Shaishava*, from birth to 3 years, (2) *baalya*, from 3 to 12 years, (3) *Kaumara*, from 12 to 18 (4) *Yauvana*, from 18 to about 50 and (5) *Vardhakya*, 50 years and over.

The *Grihya Sutras* which describe in detail the various Hindu ceremonies also indicate the awareness of the growth (30). For example the *Sankhyāna Grihya Sutra* described two ceremonies or *samskaras* which are to be performed before the birth of a child : (i) the *garbhaadaana* or foetus-laying ceremony at the consummation of marriage and (ii) *Pumsavana samskara* or the "male making ceremony" that is performed during the third month of the pregnancy. Next we have (iii) the *Jatha karma* ceremony which is performed when the child is born, (iv) after 10 days the *namakarana* ceremony is performed (v) in the sixth month *annaprasana* ceremony is performed when the child is given the first feeding of solid food. (vi) The *chudakarma* is performed in the first or the third year. The first tonsure of the hair is thus looked upon as an important phase in the child's growth and its introduction to the rules of bodily hygiene. (vii) Next there is the most important ceremony, *upanayana* in the 8th year. With this ceremony the individual has a right to know and

learn the sacred lore of the community. *Upanayana* is also looked upon as the second birth of the individual, for henceforth he is a *dvija* (twice-born). After *upanayana*, the boy enters the *brahmacharya ashrama* and goes to the house of a *Guru* under whom he learns the *Vedas* and the *Vedāngas*. In a broadway it may be stated that the ancient Indians realised that the proper time to start formal education was the age of 8 and that an individual required about 12 years' life of a student in the house of a *guru* to attain a satisfactory amount of learning. At the end of this period of learning is the *samavarthana* rite which celebrates the return of the student to his home after studies. The next stage in the growth of an individual is the *Vivaaha* ceremony when the individual marries and enters the *Grihasthashrama*.

Thus we find that in ancient Indian society there was a clear recognition of the different stages of growth from conception to death, the *anthyeshthi* or the funeral rite. They also recognised that there should be no formal education during childhood up to the 8th year and that the period of formal education should be from the 8th year and extend for about 12 to 15 years. Another significant point that we have to notice is the importance attached to the third *ashrama*, the *vaanaprastha ashrama*, when the individual voluntarily gives up his rights and responsibilities at the home as well as in the society, and withdraws himself from the life of activity to that of contemplation. The *Yoga Sutras* (33) describe the way in which at birth and after, the child's mind goes out (*bahirmukha*). The individual, during his growth, learns in a formal as well as informal way as much as possible and leads an intensive life of study during *brahmacharyasrama* and a life of biological, social and occupational responsibilities during the *Grihasthashrama*, and after 50 years he enters into the *vaanaprastha ashrama*, when his mind turns inward (*antharmukha*) and he leads a life of contemplation and dedication to the higher values of life.

After this brief introduction regarding the way in which ancient Indians divided life in tune with the various stages of the growth of an individual, and the various kinds of activities in which an ideal individual had to engage himself, we may now proceed to make a brief review of the way in which the problem of growth has been tackled in recent years by the various modern branches of science.

THE NEED TO UNDERSTAND GROWTH AND DEVELOPMENT

There are two factors which determine what an individual is, what he does, and what he becomes. Behaviour is the product of organic and environmental factors which work hand in hand. So to understand and explain the behaviour of an individual at any stage of his development we must know something about these two interacting factors, the organic and the environmental. It is only with a knowledge of growth and development of children that it is possible for the teacher to properly diagnose and guide the individual so that

he can grow up to be a citizen who understands his rights and responsibilities. Investigations of experimental embryology have demonstrated that the environment affects the growth of the organism even before birth. The individual and social differences that we encounter clearly demonstrate the influence of the variations of the organic and the environmental factors. It may be said that the child's environment begins to influence him as soon as he is born. How he is handled and cared for, what sort of sights and sounds and other sensory stimuli affect him, how the physiological needs are satisfied, all these influence the way in which the child grows. The influence of the environment increases as the child's abilities mature. Consequently, the educationist must have a thorough grasp of the nature of human growth and the principles of human growth and gear the educational endeavour to this understanding.

The single fertilized cell develops into the human personality. Formal education contributes to the growth of the individual, so that, on the basis of the needs and the abilities with which the individual starts, he develops into a self-respecting, self-disciplined and self-dependent individual, who, after education, guides his own growth and the growth and development of his children and the people around him. It is obvious that to fulfil this aim of education the teacher should have a fairly intimate knowledge and appreciation of the meaning of human development from conception to adulthood and old age. Clinical as well as experimental investigations have now clearly shown that the first few years of the child's life and growth are the most significant for understanding the later development. As we shall see presently, growth is a continuous process from conception to death. So the educationist must understand at what point in the growth of an individual and in what ways formal and informal situations and techniques will help the child to attain full maturity.

THE GENERAL NATURE OF GROWTH

In the recent decades child development has become a very important field of study and investigation and scientists trained in diverse fields have interested themselves in the problems connected with it. In 1953 the World Health Organization set up a study group to consider the biological, psychological and cultural prerequisites to the understanding of human development and behaviour. Electro-physiologists, human biologists, psycho-analysts, psychiatrists, paediatricians, psychologists, anthropologists and sociologists discussed the various problems (44). The problems of child development can be studied from various angles because there are the biological as well as the environmental factors which determine the growth of children. The various disciplines which study the development of children, have used growth as a unifying scientific concept. Long ago the great Psychologist Gesell who has contributed

very much to the study of child development wrote, "growth carries a more dynamic connotation ; which organically ties the present with the past and directs it toward the future ; it places an emphasis on the total economy of the individual and a premium upon personalised period supervision....." (13).

Thus growth is an active dynamic process involving ceaseless change. The experience, which children have, determines the nature and course of subsequent experiences. The great British Philosopher Locke laid the foundations for a new approach to the problems not only of knowledge but of growth and development, when he asserted long ago that experience was the most important single factor. We may not accept his view that the child starts with its mind as a *tabula rasa*. The growth of our knowledge of genetics and embryology shows the falsity of Locke's position. But by his assertion that the basis of all knowledge and growth is experience, he opened up a new way of looking at the problems of knowledge as well as human development (29).

The normal child is a growing being. Just as he gains in height and weight as he grows, he also gains in his movements, perception, emotional control, social adjustment, language, and such other aspects of psychological and social development. Modern science has contributed very greatly to the knowledge of the way in which a child grows. While the psychologists were preparing the developmental norms after studying hundreds and even thousands of children, the anatomists, the paediatricians and the clinical psychologists were having direct contact with children and not only checked on the norms developed by the psychometrists in the child development laboratories, but also drew pointed attention to the variations in the growth of the individual children whom they had to study in the course of giving them treatment (44). This also led to the development of the longitudinal method of study, where samples of the development or activities of the same individual are studied at successive stages. Individuals were brought to the laboratory for measurements, interviews and other techniques of detailed study during their childhood and these studies continued periodically when they were at school, later at the college and after they got into their respective occupations and after their marriage. In this way these longitudinal studies done not only on the individual as he grows from infancy to childhood and from childhood to adolescence and adulthood, but also regarding his relationship with his wife, with his children, with his co-workers, superiors etc. (8). Thus, while the psychometricians made use of the cross-section method in order to build up the developmental norms by a study of thousands of children, the longitudinal method attempted to follow up the development of individuals as they grow up. The anthropologists as well as the genetic psychologists tried to study the child rearing practices in different cultures and in different groups of human beings and the effects of these practices on later behaviour and personality. As it

is well-known Freud and other psycho-analysts used the method of reconstruction of the early history of childhood in their clinical studies of the disturbed individuals. Similarly Fealy, Bronner, Burt and others tried to reconstruct the early history and the factors in child development in their clinical studies of delinquent adolescents. In a broad way it may be asserted that all these various studies demonstrated that the gratification of early needs and warm affectional relationships are far superior to deprivation, frustration and rejection. Further, these studies showed that everyday experiences leave their traces and thus determine the nature of subsequent experiences and thus affect the growth of the individual. Experiences that lead to the desirable and successful adjustments predispose the child to continue its growth, whereas failures tend to produce despair and rebellion and thus prevent growth.

Traditional teachers and parents used to believe in character training through defeats, frustrations and insuperable difficulties. It is true that defeats and frustrations may make the individual to develop a tolerance for frustration and thus help him. But defeats and frustration may also lead to inferiority feelings and to aggressiveness. They may lead to a complete lack of faith in oneself and thus may prevent the further growth of an individual. On the other hand, experimental work as well as clinical work shows that success is the best stimulus for further achievement.

Growth is the unifying scientific concept that is used by all students of child development whether they are anthropologists or sociologists or paediatricians or educationists. Growth is dependent upon the proper interaction of many factors such as the environment, the endocrine secretions, health, maturation and education.

It may now be useful to consider the relationship between the two terms, *growth* and *development*. In scientific literature these two terms are used interchangeably. However, some thinkers try to distinguish between the two terms; for instance, Frank looks upon *growth* as the cellular multiplication, like growth in height, weight, intelligence etc. On the other hand, he looks upon development as an organization of all the parts which growth and differentiation have produced (11). In other words, growth may be referred to describe the changes which take place in particular aspects of the body and behaviour, while the term development may be used with reference to organism as a whole.

As regards the definition of the term growth, some consider that growth is a process which takes place without any direction or control by the individual or by others. There is also the other view that growth is a change that occurs under careful guidance and supervision. These two views represent two aspects involved in the process. Growth depends upon both maturation as well as learning. Maturation refers to the changes in the muscles and the nervous

system as a result of time. Learning refers to the action of appropriate environmental forces operating on the individual. As a matter of fact, total development is a sequential pattern of change which involves a multitude of growth processes depending on maturation as well as factors in the environment. All growth processes are affected by the conditions under which the organism acts and reacts to the environment. Some of these growth processes like learning to walk or learning to speak take a relatively short period of time. But others require much longer time. Irrespective of the duration, these changes which we call growth and development, usually take place gradually. So we are not aware that changes are taking place. It is only when we are comparing an earlier behaviour with the present behaviour that we are able to see that growth has occurred.

We may now briefly discuss the concept of maturity. This term is also used in two ways. One usage refers to the behaviour that conforms to the standards and expectations of the adults, while the other usage refers to the behaviour that is appropriate to the age of the individual under observation. For example, temper-tantrums would not be considered immature in a child of three years, but certainly they will be considered immature in a child of 6 or 8. As a matter of fact even in many adults there may be modified manifestations of temper-tantrums, indicating immature behaviour. We may take another illustration. It is a familiar sight to see a little child of four or five running behind a rolling ball in order to rescue it. He is so keen about getting the ball that he ignores the dangers from moving cycles and cars on the road. He also forgets the warnings of his parents. For him the ball is a part of his perceived-self. So to lose it would be like losing a part of himself. However, as he grows older there is a change in his outlook. Though he looks upon his possessions as very important to him, he is less emotionally involved in them. The elder child knows that the ball which rolls away is usually recovered, so he is less anxious and because he is less anxious he is able to behave more realistically and also in accordance with adult standards.

The term *maturation* is frequently confined to the sequences and patterns which are innate whereas the term *nurture* is used to describe the impact of the environment on the developing individual. The term development may then be reserved for the end product of maturation and nurture. As we have observed above, the full significance of the interaction between maturation and nurture is not realised in such areas of development as increase in size, development of movements etc. It is only as a result of careful studies that we are able to observe the actual stages in the development of sitting, walking, finger-thumb opposition, vocalization, speech etc. But the full significance of the presence or absence of highly variable amounts of experience and nurture are seen very clearly in such areas as learning to swim, to sing, to read, to write. Activities like sleeping, eating and even speaking appear to be almost "natural" or *svabhavasiddha*.

But studies have shown that nurture plays some part even in all these activities.

The term *sequence* refers to the order of growth and development. Sequences have been found to be relatively constant in some areas which have been intensively studied, for example, grasping, walking, (18, 40). Studies in motor sequence have clearly shown that a child sits before he stands, that he stands before he walks, and that he walks before he runs. Similarly careful studies of the development of behaviour show that the child vocalizes before he uses words, that he uses sentences only after he has mastered a few words; that it is only after a large oral vocabulary has been acquired that he is able to read; and finally, that he is able to read and understand long before he is able to write (40).

Another concept which helps us in the study of growth is that of *rate* of growth. Though there will be variations from individual to individual in general, the rate of growth is very great in the first two weeks of life. At this time it is much more rapid than at any other. Similarly the rate of growth is very high during the early childhood period, that is from 3 to 6 years in the anatomic measures of height, weight etc. In comparison, the physical growth during the middle childhood period is slow and during the period of adolescence again the rate of growth is very rapid. The aim of developmental studies is to find out the nature as well as the rate of change which takes place in the organism through time.

"The concept of development includes central ideas of organisms as living systems changing with time toward greater complexity of organisation, including the relationships of parts to wholes and adult's status with some stability and self-regulation" (1). The important thing for us to determine is that the human organism is an open system which changes as a result of changes which take place within the system, and as a result of interactions with the environment. Thus the child is an active system maintained both by internal and external stimulation and he grows through time, and many of the aspects of his behaviour become more and more specialized. Finally, behaviour becomes so complex that further growth and development takes place only on the basis of symbolisation. The symbols function as a means of communication as well as stimulus to further growth particularly through problem solving.

PRINCIPLES OF GROWTH

In the last 50 years intensive as well as extensive studies have been made regarding the growth processes before birth as well as after birth, among animals as well as human beings. As a result of these studies we are now in a position to formulate a few principles underlying growth.

One of the most remarkable studies of development was that by Coghill on amblystoma, the common salamander (13). He has shown that the progressive development of behaviour parallels to a remarkable degree the growth and development of neural organs that keep the parts of the body subordinate to the whole. He found that the first spontaneous movement of the body is a flexor one in the head region. Gradually there is a movement of the tail part and with development there will be two flexures in progress at the same time, one to the right and the other to the left, both of them progressing from the head tailward. Later on the limbs participate in the movement, first the fore-limbs, and later the hind-limbs. He also found that the salamander which can live either on water or on land, developed perfectly the swimming movements that were displayed at an earlier stage of development. Coghill demonstrated that the growth of these behaviour-patterns is always a matter of the total organism. The movements are of the body as a whole; they tend to develop as small units which later become coordinated with each other. In other words, the whole movement is not built up from its parts; on the other hand, the part movements develop within the whole. As we shall see later, this work of Coghill is of very great significance to biology, psychology and education. According to Coghill the dominance of the total organism at these early stages is due to the way in which the neural structure develops. Though the growth and differentiation of nerve and muscle proceed simultaneously the neural growth always is in advance of the muscle growth. "As a result of this precocious invasion of limb-forming tissue by branches of nerve cells that are already integrating the trunk, the earliest movements of the limbs are of necessity totally integrated with trunk action." (7; 22). Other investigators who worked with the foetal movements of cats and other animals found a similar type of sequence in their development. The earliest movement was the flexion of head and upper trunk. It is only at later stages that the movements included those of the lower trunk, and later still there was the movement of the limbs, the tail, the toes etc. Much later there were the movements of the finer muscles of the face, throat and tongue. Thus these investigations have shown that the earliest movements are mass-movements and not the movements of the local parts. They have also shown that in the physical growth the development of movements proceeds from the head downward and outward to the limbs.

THE PRINCIPLE OF INDIVIDUATING MATURATION

While it is true that from the moment of fertilization intrinsic as well as extrinsic factors co-operate in the development of the organism it should be recognised that the original impulse of growth is endogenous rather than exogenous. The environmental factors whether they are internal or external support or inflect the growth, but they

do not determine the progression of development. The term maturation is used to indicate the intrinsic aspect of the growth of the organism. The principle is illustrated by the sequential series of development. Development takes place by progressive differentiation within a total action system. The first movements are of the body as a whole, or the limb as a whole, and it is only with growth that the specific movements develop. For example, when the infant cries, the whole of his body is involved. With growth the crying is limited to the vocal cords, eyes etc. Similarly, the infant moves on his forelimbs and it is gradually that he gains control over the upper limbs, by the time he is about six months to one year old, and over his lower limbs by the time he is about one to one and a half years of age. This principle lays down the basic pattern of development from the movements of the whole to the movements of the parts.

A brief reference may be made to the older behaviouristic notion that the complex movements result from the co-ordination of the simpler reflexes. In the olden days this view of development found its expression in making the child learn his alphabet before the words and the words before the sentences. Similarly in learning cycling it was thought necessary to master part movements one after the other before one could start cycling. After the classical study of Coghill, referred to above, the principle of individuation has been adopted as being nearer to the reality. The progress is from whole to part rather than from parts to whole.

2. *Principle of Integration :*

While it is true that part movements are differentiated from the whole movements, learning of new skills involve the integration of these various differentiated movements, so that the organism can function at a higher level of organization. Development thus involves a movement from the whole to the parts and from the parts to the whole. It is through integration of the individuated part that it is possible to have easy, smooth movements. Even with respect to the growth, of the organism as a whole, we find that at certain periods of growth differentiation is more dominant and at certain other periods integration is more dominant. When the period of growth is dominated by differentiation the individual is more restless, as, for example, during the first 15 months of childhood or during the period of adolescence. Following such periods is the dominance of integration in which the growth is more pleasant and smooth. Thus, as an infant grows to adulthood, these periods of differentiation and integration alternate.

Another aspect of this principle is the reorganization of the lower into the higher and more inclusive patterns. By utilizing the opposing movements of the two legs the child learns to walk. When his movements become organized he is capable of moving on a tri-cycle. After this he can learn to ride a bicycle which requires even

higher, more inclusive, patterns of balance and of opposing movements. In a similar way as the individual grows he is capable of mastering patterns of thought requiring a reorganization of his ideas due to the increase in his knowledge of reality.

3. *Principle of Developmental direction :*

Another important principle is what is termed the principle of developmental direction. Like the other two principles this principle also is biological as well as psychological. Both in the development of the body as well as in the development of the behaviour there is a gradient. The development is *cephalo-caudal* proceeding from the anterior end, in the first three months of his life, the infant gains control over the eye muscles, and in the next three months, he gains control over his head and arm. In the third quarter of the first year he can sit with support and in the last quarter he gains control over his trunk so that he can sit and creep. When he is 12 months old he gains control over his legs so that he can stand. Thus the infant who can just lift his head in the first week of his life is able to stand up only at the end of the first year and by 18 months he can walk. Thus the muscular organization and the resulting behaviour proceed from the head to the foot in the direction of the longitudinal axis.

Another aspect of this principle of developmental direction is the tendency of growth to proceed in a *proximo-distal* direction or from the centre to the periphery. As we have seen above the first reaction of the organism before birth as well as after birth depends upon the fundamental axial muscle. With growth there is a progressive advance of motor control from the larger fundamental muscles to the smaller muscles which can execute more refined movements. The upper arm and the upper leg come into postural integration before the fore-arm and the fore-leg. Similarly, the control over the hands and fingers comes after the control over the upper arm and fore-arm. Thus we find that both these cephalo-caudal and the proximo-distal trends overlap. This is why we find that the control of arms and fingers is much earlier than the control of legs and feet. Similarly we notice the progress from an immature to a mature state in the infant's prone behaviour. During the first half year of life he is virtually immobile in the prone position. The average infant can attain independent walking when he is about 60 weeks old. The infant exhibits a number of primitive modes of locomotion like rolling, crawling backwards, rocking, creeping etc., before he is able to stand up and walk independently.

4. *Development follows a sequence :*

This principle has been very well established in certain areas like motor development. The investigations of Shirley (40) and Gesell (15) clearly show the different sequences in the development of movement by the child. Similarly Gesell has shown that there

is a sequential development in respect of adaptive behaviour and personal-social behaviour. It is on the basis of these sequences that Gesell has built his pre-school tests of development so that we can find out to what extent the child is normal in its development and where he is retarded. Similarly, Piaget has described 17 types of causal thought and has asserted that causal thinking evolves steadily from stage to stage. According to Piaget (35) when children were asked why a bottle put in water sinks to the bottom the younger children gave a phenomenalistic causality; they said, it sank because it was white. Thus at this early age they had no true concept of the relation between bottle and water. Because they found that bottle and whiteness went together they explained one in terms of the other. At later stages children give more mechanical and logical explanations. Deutche (9) studied the children's thinking from 8 to 16 years and found examples of phenomenalistic and logical thinking even at the later age levels. These findings did not support the conclusions of Piaget. However, she did find that phenomenalistic explanations decreased and the mechanistic explanations increased with age. This shows that the phenomenalistic explanations probably in certain areas continue even at the higher age levels. This may be due to social, cultural and educational influences. Gesell and Amis (14) found development in pre-school children when they copied a simple form like the circle. At 32-36 months the child draws a circle counter-clock-wise, starting at the top. By 60 months the child draws a circle clock-wise starting either at the top or at the bottom and by 72 months and later it draws the circles counter-clockwise starting at the top in the way in which the average adult does. The child vocalizes a few days after birth and when he is two months old he is able to attend readily and react positively to the human voice. When he is three months old, he babbles and coos and by six months, he actively vocalizes pleasure with crowing or cooing. During the seventh month he vocalizes "ma" or "mu" or "da" and when he is about 8 months old he produces two syllables like "mama" or "dada". It is interesting to note that in most of the languages, if not in all, the word for father and mother is in terms of the labials "pa" "ba" "ma" or "ta" "da", from first sounds which the child makes. He starts imitating the sounds of others around when he is about 9 to 10 months and also understands gestures and responds to bye-bye. By the time he is one year old he is able to say about 2 or 3 words and thereafter his vocabulary increases very rapidly, so that by the time he is about 5 years old he is able to express himself very adequately, using most of the words used by the illiterate adults.

5. Growth, however, is *not uniform in all individuals*. Investigations have shown that while there is a regular sequence in the growth of the several aspects, still each child has his own individual growth pattern. Grave errors are caused by parents as well as teachers in not realising this very important fact. Occurrence of

uniformities in nature as well as in behaviour should not blind us to the fact that uniqueness is also a very important and significant characteristic of nature as well as behaviour. While psychometric work tells us of uniformities of behaviour, clinical studies have clearly shown that it is very necessary to make a detailed analysis of the individual under observation before we could understand why he behaves as he does. Further, uniformity does not mean identity. Psychometric work shows that there is variability.

6. Another important fact that we should bear in mind is that growth *does not proceed at a uniform and steady rate*. Although growth is continuous it may be somewhat more rapid at certain stages than at others. For example, the child grows in height more rapidly during the first year of his life than at any subsequent one year period. Similarly there is a very rapid increase in vocabulary from $2\frac{1}{2}$ to 3 years of age. Smith (41) has shown that while the child of one year may speak three words, by two years he can use 272 words and by three years 896 words. Later on, though there is growth in his vocabulary it is not as rapid as in this period. Another factor that we must note is that it is not possible to predict growth in one aspect from the knowledge of the rate of growth in another aspect. From this point of view a typical child has many "ages". For example, a child of 10 years of chronological age may have 12 years of mental age and yet in weight or social age he may be below what is normal for his age. In the cities, parents are anxious that their children should prepare themselves and pass the public examinations at as early an age as possible. Because of superior mental age and superior reading age a child of 14 may be able to pass the matriculation examination and probably with high marks, but physically, emotionally, as well as socially he is too immature to proceed to the college. This is one of the reasons why attempts are now being made to raise the minimum age of entry to the University and college classes to 18. This is so in the Western countries. It is also true of rural children in India. Because the young person is unable to cope with the social and emotional problems of college life he may become a mere book-worm and lose all initiative and originality in the social as well as intellectual field. Growth in experience is as important as growth in height, weight or intelligence. When adequate experience is lacking and when growth in the social and emotional aspects is not satisfactory the individual will not feel equal to the demands of circumstances of his life.

7. Finally growth may meet with checks. It may be retarded by childhood diseases, emotional shocks, and other unhappy early experiences. The course of subsequent development will be conditioned by these early experiences in life. That is why psychiatrists as well as clinical psychologists attach a great deal of importance to the quality of the growth process through the earlier period of life. As we have seen above, growth is most rapid during these early years of life and the diseases and experiences at this period leave a

permanent trace on subsequent growth of the individual. Parents as well as teachers used to believe that children ought to be trained in character through defeats, frustrations and insuperable difficulties. Clinical studies have now established that the experiences of failure tend to produce despair and rebellion and thus prevent growth. On the other hand successful adjustments predispose the child to grow normally. The practices of modern progressive education are based upon these findings. If the child is provided with situations which afford the proper type of experiences he will grow properly. Of course, these experiences ought to take into account the stage of the development of the child, his health, maturation etc. As we shall see in the next* section the growth of intelligence is affected among the underprivileged children by the lack of opportunities and right kind of experiences.

HEREDITY AND ENVIRONMENT

That there are individual variations has been a well-known fact from ancient times. Indian villagers generally make use of the differences in the length of the fingers in the hand analogically to stress the individual differences among the children in the same home. The problem is whether these individual differences are exclusively innate or are exclusively determined by the differences in environment. Among the ancient Indians the recognition of these individual differences led to the postulation of the doctrine of rebirth. It was believed, and even now it is extensively believed among the educated as well as uneducated, the sophisticated as well as the simple, the scientifically trained as well as those who are illiterate, that an individual has to take a series of births before he reaches the stage of perfection. It is believed that individual differences that we observe among human beings are attributable to the variations in the actions and experience of individuals in their previous lives. There is also the caste system in India which implies that the potentialities of an individual depends upon the *Varna* to which he belongs. This position leads to the hereditarian standpoint by which it is believed that what an individual is, depends upon the family and the caste in which he is born. It is obvious that these two standpoints that of *Punarjanma* and that of *Varna* are contradictory. The author of the *Bhagavadgita* has reconciled these two positions by asserting that the family and the caste in which an individual takes birth depends upon the actions and experiences of an individual in his previous births (37). It is not necessary for us to examine the validity of these contentions. It may be asserted in passing that the doctrine of *Punarjanma* in its original as well as in its modified form is beyond scientific examination. Just as caste system in India is based on the hereditarian hypothesis, similarly the class system in medieval Europe was also based upon the hereditarian outlook.

The behaviourist Watson raised the banner of revolt, as it were, when he asserted that heredity has no role whatever in the

determination of individual variations. He fully subscribed to the position of Locke that the mind is a clean slate when it starts and that all the abilities, aptitudes and variations in temperament are due to the influence of environmental forces. For the last 50 years extensive studies have been made to find a solution of the problem of the relationship between heredity and environment. We may review the literature in two sections: (a) Maturation and learning, (b) Nature and Nurture. Finally, we may close this section by a review of the new concept of "readiness."

(a) Maturation Vs. Learning :

Fundamentally the development of behaviour is dependent upon the patterns of interaction of the neurons of the nervous system. The problem is how these neuronal associations are formed so that appropriate behaviour arises. The neuronal associations may be directly determined by the process of growth and self-differentiation or may be patterned by functional regulation through experience and training. There is no doubt that most of the activities of the child, the adolescent and the adult are due to experience and training. But the problem is, to what extent the success of the training depends upon the potentialities in the individual. Then there is the problem of the inherent predetermination of the neuronal associations involved in the growth and differentiation of nerve cells. In 1931, Holt (21) argued that none of the patterning of synaptic actions between sensory, central and motor neurons is inherently predetermined. His contention was that the nervous system, to begin with, is an unorganised equi-potential network capable of leading to diffuse random reactions. In the course of activity arising out of random movements neural organization is gradually achieved by the outgrowth of dendrites toward the axons of other neurons. He went to the extent of asserting that even the most primitive reflexes and the primary synaptic connections of the peripheral nervous as well as of the higher integrative relations were patterned functionally in this manner. This extreme position stimulated neurological work and by 1947, Hunter (22; 348-352) in his comments on the heredity-environment symposium emphasised the need to recognise the forces of inheritance. Sperry writes "A survey of the evidence, as it now stands, leads to the conclusion that the basic patterns of synaptic association throughout the vertebrate nervous system are organized for the most part by intrinsic forces of development without the aid of learning. This would include most of the integrative structure of the spinal cord and the brain stem. At higher levels of the brain, even in the primates, all the intricate interrelation known to neuroanatomy, such as the various projection systems to and from the cerebral and cerebellar cortices and the interconnecting systems between cortical areas in so far as they are constant within a species must likewise be included among the relations of the nervous apparatus subject to inherent organization" (43; 237).

Thus it must be recognised that the basic integrative activity of the nervous system is organized directly in the growth process itself. At first the nerve fibres are few in number, short in length and interconnect only a few nuclear masses; but, in the course of the growth, many more fibres are added and the short fibres become lengthened. Studies have shown that this growth patterning is determined independently of activity in a manner characteristic of the species. Maturation in man depends on the human genes and the human intra-cellular, inter-cellular and external pre-natal conditions. Even after birth there is growth unaffected by activity. Thus maturation occurs before birth as well as after birth. Just as the various organ systems develop before birth and after birth, just as the cells of the early embryo differentiate into a variety of types to form diverse tissues of the adult body, similarly the cells of the nervous system undergo differentiation among themselves into a multitude of neuron types. This is not limited to the nervous system. The associated muscular and sensory tissues also become differentiated and specific.

Development that results from maturation must be contrasted with the development which depends on stimulation and response or on the activity of the receptor, the neural and the effector mechanisms. For example, our biceps develop by maturation, but the size of the muscle later on depends on exercise a great deal more than on maturation. As regards our habits, skills and knowledge, these depend entirely on learning. They develop as a result of stimulus-response activities involving the brain. In other words, these developments are individual rather than racial. That maturation is a very important process can be seen by the fact that no amount of exercise or learning will enable the newborn child or the six month-old child to walk or to talk. Similarly, we cannot teach a child of six months to pick up a pellet with his fore finger and thumb. As we have seen in the early section, all these activities develop according to a sequence, and, as we shall see in a later section, exercise as well as learning become fruitful only when the organism is in a state of readiness to profit by exercise and learning. We may give the results of a few studies to show the importance of maturation in the race as well as in the individual and the limitations of exercise and learning.

Kellog and Kellog (26) reared an infant boy and an infant Chimpanzee in the same human environment. They treated them both with the same affection and tenderness. Their aim was to see to what extent the chimpanzee could be humanized by the human environment. The boy was two months older than the chimpanzee. Still the chimpanzee was able to learn to skip, to open doors, to eat with a spoon, to drink from a glass, earlier than the boy. This was because the chimpanzee, though two months younger than the boy, was physically more mature. However, the chimpanzee reached the upper limit of its maturity much faster than the boy could reach the upper level of human maturity. By 15 months of age the boy surpassed

the chimpanzee in almost everything except in strength. The experiment was terminated when the boy was 19 months old. The chimpanzee, though of an inferior species, was superior to the human child in certain respects. This superiority was due to the earlier maturity of the chimpanzee. On the other hand, the boy, even with his relative immaturity, was able to learn to speak, to imitate and to solve a number of problems which the chimpanzee could not do even though it was more mature as a chimpanzee and even though the training given to the two was the same. From the standpoint of evolution the human being is more mature than the chimpanzee so that the human child very soon becomes superior in learning ability to the most mature ape.

Basic sensory structures result slowly from maturation. For example, the structure of the eye develops even when there is no visual stimulation and no visual activity. A good illustration of structural maturation after birth is the development of the sex glands and of the secondary sex characteristics without any sexual activity. It must also be borne in mind that the earliest responses result from maturation. Sensory, neural, and motor structures must develop before activity can occur. Various visual reflexes occur slowly as a result of maturation. Similarly when the light first strikes the eye the pupil gets small. In 1940 Metfessel (31; 177-198) reported the results of his experiment with the canaries. He brought up these birds from the moment they were hatched in separate sound-proof cages, so that they could not hear the sounds of their species. However, these isolated birds began to sing in the characteristic way at the appropriate time. This showed that the normal vocalisations of birds did not depend upon training or imitation.

It is not possible to conduct such experiments with human infants, nor can we study this problem of maturation, exercise and learning in their case. However, Gesell developed the method of co-twin control. In this method two identical twins who are identical in their heredity are taken up for study in which one member of the pair receives specific training while the other is reserved as a control. Any residual difference between the twins could be attributed to the experimental factor in the environment. Gesell and Thomson (16) tried to find out whether the training of one twin in stair-climbing would give an advantage over the untrained twin. At 46 weeks of age neither of the twins could climb stairs. At this stage twin T was given training to climb stairs. It was found that after 4 weeks of training she was able to climb without assistance and by 52 weeks she climbed five steps in 26 seconds. During all this period twin C, the control twin, had no chance of climbing a stair. When she was 53 weeks old she was placed in the stair-case situation. She climbed the stairs unaided. She took 45 seconds to climb the five steps but with two weeks of practice, she was able to climb the five steps in 10 seconds.

This experiment shows the strong influence of maturation. It also shows that there is maturation even after the normal functioning begins. It may be inferred on the basis of our present knowledge that it is maturation that provides the basic structure of the organism and his potentialities for early growth. Activity can influence only the further growth of the structures already present. It can increase the size of the muscle fibres on the one hand and the nature of the nerve connections on the other. But activity cannot produce new nerve cells. Development of an individual as a competent adult depends both on maturation and learning. Particularly in human development, learning after a certain stage, plays an extremely important part. The habits and skills of a person depend upon the environmental situations promoting practice. An individual's knowledge as well as social attitudes greatly depends upon the environmental situations in which he is brought up. Thus most of the abilities of an adult as well as his personality-characteristics are dependent on both maturation and learning. Particularly in the case of speech, while maturation gives the structures which can produce sounds, all languages, including the mother tongue, must be learnt.

(b) *Nature and Nurture:*

Heredity covers all the factors which are present in the fertilized ovum. The environment starts operating right from the moment of conception. The cellular structures which carry hereditary determiners are surrounded by other structures and these constitute their environment. Our innumerable inherited characteristics are due to genes which are in the chromosomes. Each gene is surrounded by other genes in each chromosome and each chromosome is surrounded by other chromosomes. This is known as the intra-cellular environment. The nucleus of the fertilized cell is surrounded by the cytoplasm. When the cells begin to multiply each cell is surrounded by other cells. This is known as the inter-cellular environment. This represents the influence of other cells upon the given cell. Sometimes this influence may come from a distant cell. For example, the glands secrete and send their products through the blood stream, to other parts of the body. Finally, there is the external environment within the womb. This is what is called the external pre-natal environment. This includes the amniotic fluid which surrounds the foetus. It also includes the food and other substances given to it from the mother's blood-stream and the pressures exerted on it through the surrounding tissue. Thus before birth the individual is influenced by the intra-cellular, the inter-cellular and the external pre-natal environment. After birth there is the external environment. One of the remarkable thing is that this internal environment is constant from one human being to another. It is only after birth that the external environment differs a great deal. Thus growth results from an interaction of hereditary and environmental conditions right from the moment of conception.

Some babies are born with physical and psychological abnormalities which depend almost entirely on defective heredity. Similar abnormalities in other children may be determined almost exclusively by some defects in pre-natal environment. While the inherent abnormalities occur among related individuals, the abnormalities resulting from defective pre-natal environment are isolated occurrences. For example, a boy's arm may be withered because the umbilical cord twisted round it during the foetal period. Similarly deficiencies in calcium in the mother's blood-stream may bring about abnormalities of the skeleton. Some abnormalities in the brain development are believed to result from some chemical inadequacies of the mother's blood. Many cases of feeble-mindedness, epilepsy and other defects are due to injuries to the head at birth, either through prolonged pressure during a difficult labour, or from instrumental delivery. It is obvious that all these defects are environmental. Heredity has nothing whatever to do with them though these defects occur at birth itself.

As we have seen already, the post-natal environment, the external environment after birth, is extremely variable and has nothing to do with the genetic material with which the individual starts his life. Even children born and brought up in the same home do not have the same environment. For example, there are differences in the ability of parents to handle children. With more children they become more experienced. There may also be differences in wealth. The parents may be richer when subsequent children are born. Even in the same environment the children are not influenced by all the people and the events in the same way. That is why it is very difficult to predict the relative influence of heredity and environment of post-natal psychological development. We often believe that because all the children go to one school their environment is constant. But a little reflection will show that many things which are present in the environment may have little effect on a given individual because they do not stimulate him to react. When the environment has no stimulus value it has no influence whatever on the growth of the individual. Though the children may go to the same school, what they learn, and how much they learn, depends not only on their respective heredity, but also upon their previous experience, their equipment, age, vocabulary etc. Children from underprivileged classes and castes, children of illiterate parents, children who have no books of their own, children who do not have sufficient nourishing food, all these, are bound to react in a different way from children who are more favourably placed. Some schools specialize in providing the necessary drill to all the children in the class so that all of them come up to the level of the grade. If this is done at the end of the year most of the children will have about equal mastery over the assigned material. But the brighter children in the group will not be stimulated by this kind of ironing out of the differences in the individuals. Such schools do not provide necessary environment for bringing out the best in each

individual. On the other hand, the schools which encourage each child to advance at his own pace will give free opportunity for the development of individual differences.

Thus it is obvious that every individual is a product of both heredity and environment and the individual differences that we observe must be attributed to both heredity and environment. But there is the question, which is more important, heredity or environment, in producing these individual differences? If individual differences are due mostly to heredity, the best hope for the future of mankind lies in improving the human stock as far as possible. This was the belief which led to the programme of eugenics in England and some of the Western countries towards the end of the last century and the beginning of the present century. But on the other hand, if differences are due mostly to environment, then society should concentrate its efforts on providing better food, better homes, better education, better working conditions, better recreational facilities and so on, so that the population as a whole could be improved. It may be asserted in a broadway that this belief has become more influential and has led to practical programmes for the improvement of underprivileged groups, not only within a nation but among nations. Particularly, since the closing of the second world war, the backward countries which have become independent are now launching on huge programmes to improve education as well as living conditions by means of industrialization. The more advanced countries have now abandoned colonialism and exploitation of weaker nations and are launching on programmes of economic and technical aid to the underdeveloped countries. It may be stated that all this change in the attitude of people within a country, and among countries, is due to the realisation of certain values of life and society.

Is there any scientific basis for launching these programmes of better educational facilities for the backward groups within a country and for the under-privileged countries in the world? A review of some of the experimental studies regarding this problem will be useful. Long ago Gordon (17) in his study of the intelligence among the canal boat children showed that the Binet type of tests were heavily loaded by the use of educational opportunities. He also showed that the IQ of the older children became less. This led to the attempts to develop what were called the culture-free tests so that the tests use items as well as processes which do not depend upon education. In this connection it will be useful to recall the view of Hebb (20) regarding two meanings involved in the term 'intelligence'. According to Hebb there is intelligence 'A', an innate potential, the possession of a good brain and a good neural metabolism, and intelligence 'B' which is based on the functioning of the brain in which the development has gone on. The intelligence test score is related to intelligence 'B' rather than to intelligence 'A'. "Most of the disagreement in recent years over the nature of 'intelligence' concerns the relation of 'A', innate potential, to 'B' the estimated level of function at

maturity. If A determines B fully, intelligence is a matter of heredity and maturation only ; the IQ is not dependent on experience. But if intelligence A is only one of the conditions of B, under the sole determinant, what then ? Intelligence A is still hereditary and it would not be true to say that 'intelligence' (without qualification) is influenced by experience : only intelligence B is so affected.

"The dispute in the current literature has arisen, I believe, partly because of the double reference of the term "intelligence" and partly because it has not been realized that if the effects of early experience are more or less generalized and permanent, one can concede a major effect of experience on the IQ and still leave the IQ, its constancy and validity, as an index of future performance." (20 ; 295).

In 1930 Outhit (32) studied the resemblance of parents and children in intelligence. He tested 50 families, each consisting of the parents and at least four children. He found that in every family children differed considerably from each other and from their parents. He also found that on the whole more intelligent parents have more intelligent children. But it was also found that children of more intelligent parents tend to fall below the level of their parents ; the children of the less intelligent parents tend to be more intelligent than their parents. He found that when the average of two parents is 110 IQ, only 35% of their children surpass them. But when the average of the two parents is less than 90 IQ, 80% of their children surpass them. This shows that the biological situation with respect to intelligence is like that with respect to height of the parents. There is the law of regression operating and the children of those below average as well as those above average tend to approximate to the average. This shows that there is no need to have an alarming view regarding the future of humanity because the people of the underprivileged castes, classes and nations are now increasing in number due to the facilities that are being given to them. In 1953 Bayley (3) studied the relationship between the intelligence test scores of children and the education of the parents. He found that the parents' education yields much better prediction of children's intelligence at 18 years than do children's own test scores at any age below two years. Similarly, Havighurst and Breese (19 ; 241-247) found that children of higher social status were superior to those of lower status in each of the Thurston tests of primary mental abilities. Kanthamani (25) reported that there was a significant correlation between the amount of education of parents and the intelligence test scores of the children. All such findings indicate that the better educated parents provide environments more stimulating to the mental growth and that, in general, children tend to acquire the intellectual status of the environment in which they have been brought up.

Studies regarding differences in intelligence between rural and urban children in England as well as in the United States show that

urban children are superior to rural children. This has led to the assumption that rural children come from a poorer stock than urban children. On the other hand, the environmentalists say that this may be due to defect in the process of standardization of tests. A test which is standardized on city children and used on the rural children will necessarily show that rural children are inferior. There is also the problem of test sophistication. City children are used to doing work at high speed and attach a great importance to accuracy. Rural children may probably be brought up under conditions where working at high pressure is not at a premium. Shepherd (39) found that rural children are inferior to urban children on verbal tests and on tests involving speed of performance. But they were definitely superior in mechanical assembly test and in spatial relation test. It is obvious that in India careful studies in this direction will yield more conclusive results because the majority of our children are in rural areas.

We may now briefly review the results of Wheeler's work (47 ; 231-234) with over 3,000 children on Tennessee Mountains. He made a comparison of the mean IQ's of children of various ages as tested after a 10 year interval. He found three outstanding results. In 1930 as well as in 1940 it was found that mean IQ at all ages was below 100 except in the case of children of six years of age which was 102.6 in 1940. He also found that the average IQ of the six year old children was 97.7 and that of sixteen year old children 73.5 in 1930. On the other hand in 1940 while children of six years had a mean IQ of 102.6 the children of 16 had a mean IQ of 80. Finally he found that there was an approximate increase of 10 points at all ages between the 1930 means and the 1940 means. Thus these results show that the IQ among mountain children tends to decrease with increase in age, a result confirming that of Gordon among the canal boat children. He also clearly established that there was an increase in IQ between 1930 and 1940. Wheeler attributes these gains to better schools, greater school attendance and improved contact with the outer world. This study shows the remarkable influence of changes in environment in helping children to grow fully. As Hebb writes, "there are then two determinants of intellectual growth, a *completely necessary* innate potential (intelligence A) and *completely necessary* stimulating environment. It is not to the point to ask which is more important ; hypothetically, we might suppose that intelligence will rise to the limit set by heredity or environment whichever is lower. Given a perfect environment the inherited constitution will set the pace. Given the heredity of a genius the environment will do so." (20 ; 302). Hebb also wrote, "The nature of the cultural environment that is necessary to this conceptual development cannot be described accurately. It does not necessarily consist of a formal schooling and it may be present in spite of poverty. In general one might guess it consists of an exposure to ideas, to books and to intelligent conversation ; the opportunity to acquire any technical knowledge and skills ; and exposure to persons with social

skills who are good at getting along with others." (20 ; 301) It is now generally realised that one of the crucial methods of determining the relative potentialities of heredity and environment is to make a longitudinal study on several pairs of identical twins who were separated below the age of one year and who are brought up in a totally different homes, one twin being brought up in a home with books, toys, and plenty of exposure to intelligent adults, while the other being brought up by illiterate, poverty-stricken and anti-social foster parents. Obviously this is not an easy task.

Sohanlal (42) standardized a group verbal test of intelligence and gave it to 1419 children of 11 plus, studying in class six and above and found the mean IQ to be 100.54 with a sigma of 15.66. He found that the average IQ for Brahmins was 102.00, for Kayastas 101.49, for Kshatriyas 101.07, for Vaishyas 99.37 and for Shudras 95.44. It may be noted that while in the first four caste groups the number varied from 166 to 356, the number for the Sudras was only 32. Sohanlal took up for study all the children in the Government High Schools of U.P., of 11 plus age. This shows that at the time when these tests were given in 1941 very few children belonging to Shudra castes were studying in the Government High Schools. He found that the difference between the Brahmins, the Kayastas, the Kshatriyas and the Shudras was statistically significant. As regards Hindus and Muslims he found that the average IQ for the Hindus was 100.96 and that for the Muslims 99.19 (C.R. 1.95). As regards professions he found that the children of lawyers, medical men and teachers all had IQ over 103.91. Children of clerical occupations had a mean IQ 100.96. Children of zamindars had 99.67, those of cultivators 98.97 and those of businessmen 96.53. The differences between the legal and the clerical groups, legal and business groups, legal and zamindar groups were all significant. Similarly between medical and business, teaching and business, and clerical and business were all significant. Bhatia (4) used a performance test of intelligence and tested 512 illiterate boys of 11-16 and 642 school-going boys of 11-16 in the various parts of U.P. He found that there was a very big and highly significant difference between the literate group and the illiterate group and so he has given two sets of norms for the two groups respectively. However, he states that the difference between literate urban group and the illiterate rural group is due to differences in the general educational environment rather than racial or cultural factors. 'The distinction between our literate and illiterate groups, it would thus appear, lies more in an opportunity to come in contact with a certain educational and general environment than in any other spheres. The illiterates have the same general Indian culture as the literates. They have, however, the disadvantage that they have been denied certain additional opportunities available to the latter.....although the illiterates have been denied certain opportunities, they inherit a way of life equally shared by the literates.' (4 ; 81). He gives an analysis of the behaviour of children with

respect to the immediate memory test which was one of the tests in the battery. On pre-test he found that the boys had great difficulty in repeating the digits and even more in reversing them. "The reason we soon discovered was the unfamiliarity with digits, for, even if they know the numbers they are certainly not familiar with them in the way that school boys are." (4; 23). So instead of digits he used Hindi consonants. He reports "while in the act of administering these tests to these boys, one could not fail to notice the marked unfamiliarity of the whole situation for them. For example, in the case of the memory test (even in its modified form) one noticed that the boys were simply *not accustomed* to this sort of paying attention to a certain situation. The concentration of attention which any test situation requires appears quite foreign to them. It appears to the present writer that this paying of attention to essentially abstract situations for any considerable length of time is essentially the result of formal school practice and the demands of civilization. The boy reared away from civilization feels freer in the atmosphere of an outdoor movement and activity—which he seems to utilise fully—rather than in the world of mental concentration and abstract thought". Thus Bhatia explains the big gulf between the literate group and the illiterate group on the basis of differences in the general and educational environment between the urban and rural groups. It would have been very useful if he had taken the literate as well as the illiterate groups from the rural areas themselves. That would have showed the influence of schooling upon intelligence.

As we have observed Bhatia prepared two sets of norms for the two groups, on the basis of performance within each group. "The same IQ (for example 100) therefore does not denote the same level of performance with respect to the battery of tests in both cases, the performance of the illiterate group being consistently lower". He found among the illiterate group in the rural areas members belonging to all the various castes like the Brahmins, Kshatriya, Vaishya and backward Hindu caste groups like the Ahir, Nai, Dhobi, Kumhar, Chamar, Bhangi etc. He found that the mean IQ for the Brahmins group was 106.52, for the Kshatriya group 105.2, Vaishya group 103.30 and for backward groups 100.38. Thus even among the illiterate we find that there are considerable differences depending upon the caste. As regards the occupational groups of the rural areas, however, Bhatia reports rather peculiar results. He found that the farmers had a mean IQ of 97.48, shopkeepers 99.88, artisans and craftsmen 100.79, hired labourers 94.59 and domestic servants 103.74. He reports that these domestic servants with a high mean IQ "have really to be considered from another point of view as they are generally drawn from the urban sample of illiterate population, whereas the rest are from rural areas" (34; 99). Thus it is found that the children of illiterate rural people who work in urban areas have a definitely high mean IQ comparable

with the mean IQ of the caste groups, the Brahmin, Kshatriya, Vaishya and Shudra among the illiterates.

We may now proceed to analyse Bhatia's results regarding the literate group. As regards caste groups he found that the mean IQ for the Brahmin group was 97.86, for the Kshatriya 95.39, for the Kayasta 101.18, for the Vaishya 98.18, and for the backward castes 98.61. Bhatia has confirmed the results of Sohanlal's investigation that the Kayasta group of children have the highest mean IQ in U P. Another significant feature is that there is no difference between the Brahmin, Vaishya and the backward castes. It is rather strange that there is a big difference between the Brahmin illiterate group, which is very superior to the rest within that group and the Brahmin literate group which is a little lower than the backward caste group, though not significantly, in mean IQ. These conflicting results appear to be due to the fact that the differences among the caste groups show off more in the illiterate rural area than in the literate urban area. Bhatia writes "our results therefore would seem to indicate the probability of a general equality among different communities when equal opportunities for education are even provided for them." (4; 97). He found that the group with the highest mean IQ of 104.30, was the Anglo-Indian and Christian group. He asserts that this is due to the fact that this is a selected group, the parents of these children being very high in the occupational level. As regards occupations, Bhatia found that for higher professions the mean IQ was 106.52, and the mean IQ for the clerical services was 100.37 and for lower services 93.49, for the business group 96.88 and the zamindar group 91.29. It is a pity that Bhatia has not given the breakdown of these occupational groups in terms of caste groups. Nor has he given the breakdown of these occupational groups in terms of the education of the parents. However he has confirmed the results of the other investigators that there is a great relationship between the intelligence of children and the occupation of their parents.

Indira (23) gave the Collins Drever performance scale to 500 children of 4-8 years of age. She tested 348 Brahmin children with a mean score of 42.1, 40 Lingayet children with 44.0, 76 Vokkaliga and Kuruba children with 42.0 and 27 Vaishya children with 42.0 as the mean score. She also found that 184 children of parents with University education had 45.6 as the mean score and 202 children of parents with secondary education had 40.5 as mean score and 32 children whose parents had elementary education or less 21.5 mean score. As regards annual income she found that 226 children of parents with Rs. 1200/- and below had a mean score of 38, 119 children of parents with an annual income from Rs. 1200-2400 had a mean score of 45.5 and 84 children of those with annual income above Rs. 2400 had a mean score of 43.5. With respect to occupation she found that 64 children whose parent was a college or High School teacher had a mean score of 51, 60 children of engineers and

doctors had 45.00, 46 children of elementary school teachers 41.30, 114 children of clerks etc. 39.20, 66 children of business men, 40.00 and 66 children of unskilled labourers, 32.00. She writes, "environmental factors seem to stimulate the growth of intelligence. For instance, the higher education of parents, as the results indicate, has influenced the performance of the children when compared with those poorly educated and illiterate parents. Fathers who hold higher occupations appear to provide better and more suitable environmental conditions to children than those who are working in lower occupations. There is no difference between the various castes with regard to intelligence". (23 ; 100).

In 1954 Varadachar (46) gave Raven's progressive matrices test (1947) to 332 children of three age groups 7, 8 and 9 who were studying in elementary schools. In order to control as many conditions as possible he took up for examination only children whose fathers were unskilled labourers with income below Rs. 1000/- per annum. He tested children studying in government schools. He studied the differences between the Brahmin children, non-Brahmin children belonging to the Vokkaliga, Lingayet, Ganiga, Rajaparivara and other castes and Harijan children. He found that in every age group the Mysore children were about 3 to 6 point less than the corresponding norms of Raven. He writes "it would be incorrect to conclude that Indian children are inferior to English children. The sample of Indian children in this investigation is from the lower socio-economic group studying in hardly well-equipped government primary schools". Thus he attributes the difference to differential home environmental situation (46 ; 100-102). As regards the relationship between caste and intelligence he writes "at no age level, between any two castes, was there any significant difference. In other words the Brahmins, the non-brahmins and the Harijans were similarly equipped with regard to intellectual ability as revealed by performance on the progressive matrices." (46 ; 126). He reports that during the testing time he found that the Harijan boys were as good as the other boys in the grasping of instructions as well as in executing them.

Kanthamani (25) gave a scholastic aptitude test in English, standardized in Mysore, to over 1000 children studying in three high school classes. She found that 955 Hindu children had a mean score of 37.61, 116 Muslim children had a mean score of 36.37 and 70 Christian children had a mean score of 40.90. She found that the difference between the Hindus and Christians, as well as the Muslims and Christians was significant. Her results confirm the results of Rice, Sohanlal and Bhatia that Christian children have a higher IQ than the other groups. As regards caste she found that 720 Brahmin children obtained a mean score of 38.59, 58 Vokkaliga 35.33, 57 Lingayet 36.82, 35 Ursu (Kshatriya) 31.13, 24 Harijans 26.76, 61 other Hindus 34.80. The difference between the Brahmin mean score and the mean score of each of the other castes was significant. As regards the influence of education she found that 92

children of illiterate parents had a mean score of 30.38, 221 with elementary education, 33.27, 335 with secondary education, 37.41 and 310 with University education 46.69. With respect to occupation she found that 390 children of professional groups had a mean score of 45.36, 286 of the clerical group, 43.61; 94 of the agricultural group 37.70; 81 of the skilled workers 36.54; and 65 of unskilled workers 32.81. She found that the difference between the professional and the clerical groups was not significant but the difference between the professional group and the other three groups was significant.

In 1960, Eswara (10) found that the Brahmin children studying in Mysore city middle schools were superior in intelligence to other caste groups. The difference was statistically significant. Seshagiri Rao (38) also found that as far as the rural middle school children are concerned the Brahmin children were superior to other caste children. He also found that the difference in intelligence between the rural and urban children studying in the last three grades of middle schools in Mysore District was not significant. This shows clearly that equal educational opportunities tend to decrease the difference between the rural and urban population.

Thus all the studies in India and Western countries clearly show positive relationship between the education, occupation and income of parents and the level of intelligence of the children. It must be remembered that mental development is a dynamic process of interaction between the individual and environment. As the writer pointed out long ago (27; 139-154) we must make a difference between the two terms "innate" and "inherited". Intelligence is an innate quality with its limitations fixed by heredity. However, it should not be presumed that intelligence is transmitted from parent to children in the sense that more intelligent parents have more intelligent children and less intelligent parents less intelligent children. As we have seen above, Outhit (32) showed that the average level of the intelligence of children of the parents with low IQs is higher than those of the parents. It is a familiar fact that the aim of every parent, rich or poor is to provide the best facilities possible to their children, particularly in a competitive society, so that children develop to be better than their parents. The part played by the environment is to help the individual to reach the maximum that he is capable of. Several studies have been made recently regarding the depressing effects of lack of loving care and of conditions of stress and insecurity on the mental growth of children (5 and 28). However it is also found that in some cases children appear to be actually stimulated to an accelerated intellectual growth in a discouraging environment (2). There is a need for more careful investigations to determine exactly the emotional factors that prevent mental growth. Another aspect of environment that is being emphasised in recent years is that of motivations and goals. When the group goal is to make the child follow the

occupation of the parent as among the Indian castes and in the rural areas, there is no motivation operating. Or the other hand, when the culture of the group stresses personal achievement the children will be motivated to do better and better.

As the present writer pointed out long ago (27 ; 150—151) the special provision for the educational facilities to the Harijars in India and to some of the other backward castes in India has led to strong motivation among these groups and we find young men and women of these under-privileged castes with distinction in the intellectual field. It is impossible to over-evaluate the influence of the factors of motivation in mental development. As Hebb (20) has pointed out, the present task is to find out the environmental variables which stimulate the growth of intelligence. It is also necessary to find out the age at which such environmental influences have great influence.

(c) *The concept of readiness :*

In recent years the concept of readiness has become very prominent. It is now generally believed that the assessment of a child's readiness for learning a particular activity is the first step that should be taken in successful teaching. The concept of readiness is in a sense very old. There is the ancient Indian conception of *adhikara* or appropriate capacity to learn, especially *yoga*, which corresponds to the modern concept of readiness. Long ago Pestalozzi (34) wrote, "all instruction of man is then only the art of helping nature to develop in her own way and this art rests essentially on the relation of harmony between the impressions received by the child and the exact degree of his developed powers." Similarly John Dewey asserted that it is only by the time the child is 8 years old that he is capable of paying attention to visual and written language. This is strongly reminiscent of the ancient dictum that the boy should go through the *upanayana* ceremony when he is 8 years old. Unfortunately due to a number of circumstances the parents as well as teachers, particularly among the higher castes and the upper classes, are very eager to make even a child of 4 start reading and writing, long before he is ready for them. The study of reading readiness received a great deal of impetus in the twenty-fourth year book of the National Society for the Study of Education (45). The readiness period is now generally defined as a time at which the child is just beginning a cycle of growth. In clinical work, it has been found that the attention given to reading readiness is enabling teachers to solve the problem of teaching children to read. When the child is between six and eight years, he is ready for being introduced to reading, writing and arithmetic. Earlier, the aim of the nursery school is to provide the necessary environmental facilities to help the child in these three basic arts through activity. Long ago Gandhi (12) wrote that the child should learn to read before he learns to write. This was based upon his practical experience of teaching his own as well

as other children how to read and write. Nursery schools provide experiences like picture descriptions which will enable the child later on to read fluently. Similarly, activities involving manipulation with fingers and drawing and tracing help the child to become ready to learn the art of writing when he goes to the primary school after six. In the same way various activities, involving number and concepts of space, in the nursery school enable the child to learn arithmetic. If the learning takes place at the appropriate period of growth, teaching will be more effective. There will be no need for drill, pressure and the like. It is when the child is made to learn an activity before he is ready or long afterwards that pressure from the teacher and constant drill become very important.

The term 'readiness' as it is used today includes physiological maturation, general mental ability, experiential background and freedom from emotional blocks. Investigations now show that maturation is a very important factor that helps learning. Bradley (6 : 162—167) made an experimental study of readiness to reading among two matched first grade children. Though several investigations have been conducted regarding the maturation for the various skills and school subjects, it must be stated that the necessary minimum level has not yet been conclusively identified.

But as regards mental age we are on a firmer ground. Long ago Binet showed that the child is able to enumerate the items in a picture before he is able to describe the items, and it takes longer still for the child to give an integrated account of the picture.

Readiness is not entirely a matter of maturation. It also depends upon the type of experiences which the child already had. We have shown how the aim of the nursery school is to prepare the child for the later activities in school. Yet another factor in readiness, as we have shown above, is motivation, the type of goals which the child has set up and his self-image. This again depends upon the experiential background. So social and cultural factors play a very important part in readiness. Finally, emotional factors also are very important. Rigidity, hostility, insecurity and family conflicts are associated with lack of readiness for learning.

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STAGES AND ASPECTS OF GROWTH

In the previous chapter we have seen, in general, the nature of growth and some of the principles of growth. In this chapter an attempt will be made to describe the various stages and aspects of growth. As we have seen above the human organism passes through a number of stages from before birth to death. Of course it must be remembered that the division into the various stages of growth is merely a device to help us to understand the growth process. As a matter of fact, it is one continuous process from before birth to death.

THE STAGES OF GROWTH

The following classification is one that is most widely used :

<i>Name of period</i>	<i>Approximate age</i>
1. <i>Pre-natal</i>	... from 0 to 250 or 300 days
(a) <i>Germinal</i>	... from 0 to 2 weeks
(b) <i>Embryonic</i>	... from 2 weeks to 10 weeks
(c) <i>Foetal</i>	... from 10 weeks to birth
2. <i>Childhood</i>	... from birth to 12 years
(a) <i>Infancy</i>	... from birth to 3 years
(b) <i>Early childhood</i>	... from 3 to 6 years
(c) <i>Later childhood</i>	... from 6 to 12 years
3. <i>Adolescence (teenage)</i>	... from 13 to 19 years
4. <i>Adulthood and old age</i>	... from 20 years and beyond

These age groupings are made for purposes of convenience to study the various stages in the growth of the individual and also because there are certain common developmental or practical characteristics belonging to each stage in the growth. We will also find that these stages are intimately related to the various stages of education. However, it must be borne in mind that there are great individual differences and so we should not imagine that every child will necessarily have each stage according to the approximate ages indicated above. The growth is more rapid or delayed according to the individual.

1. *Pre-natal Period :*

One of the important points in the study of behaviour is to trace the time at which behaviour begins. As Carmichael writes, "A

40 to 42 weeks. At 12 months, he is able to stand up with the support of a chair and he may also take a few steps. At one year the child tends to have smooth functioning in all fields of behaviour.

Between 12 and 18 months the child becomes used to language meaningfully. He develops an understanding not only of the gestures and facial expressions but also the meanings of words of the adults. There is the beginning of abstraction and the use of symbols. Thus there is the beginning of what is usually thought of as mental or intellectual functioning. Another aspect of this period of intellectual growth is the increasing span of attention. He can attend for short periods relatively complex goal-directed tasks such as putting on his clothes in the correct order and in running simple errands. By 15 months, he can, not only walk but also climb stairs. By 18 months, he is quite an expert in climbing. He is so active that he will have to be kept out of the living room where he has so many objects to touch and examine. Throwing things is one of his favourite pastimes. He can hold and drink out of a tumbler. At 18 months he is quite impatient. He wants everything to be done immediately. His inter-personal relationships are almost completely dominated by ideas of talking. Still, he is not mature enough to respond to verbal commands. Consequently, physical barriers work better than verbal prohibitions. The only way of making him leave off an activity is by beguiling him to take up another activity. At 2 years, his behaviour appears to be more organized and has greater equilibrium as compared with either at $1\frac{1}{2}$ years or $2\frac{1}{2}$ years. He can now understand and use language more effectively. Emotionally also his life is easier. His demands are not as strong as at $1\frac{1}{2}$ years. He can wait and endure temporary frustration. He likes to please others. He is quite loving and affectionate. But, by $2\frac{1}{2}$ years there is again a disequilibrium. He is rigid and inflexible. He cannot adapt or give in. He is extremely domineering and demanding. He wants everything to be done in a particular way. Consequently, he is given to violent emotions. There is resistance and negativism. So he is not easy to deal with. The mother will have to use many techniques in order to get round his rigidities and rituals. At 3 years resistance changes to conformity. He becomes co-operative. He likes to give as well as to take. He often uses the word "we". "He tends to be in good equilibrium with people and things around him, perhaps because he is in better equilibrium within himself. He no longer seems to need the protection of rituals, of doing everything always the same way. Greater maturity has led him to feel much more secure—secure within himself and secure in his relations to others." (24 ; 37—38). The child of three uses language effectively and can be controlled by it. He loves new words and he likes to entertain others and to be entertained. There is an intimate relation between the growth of language and the social development. He is now an interested and an interesting group member. So he is ready to go to the Nursery school where many activities are set up to help him in his further growth.

(b) Early childhood : (3 to 6 years).

The period of early childhood extends from 3 to 6 years. This is the period of the Nursery school. He is now able to mix with other people and engage himself in various kinds of activities. In this period of 3 years also there are variations ; the growth is not a simple progressive one. One of the important facts which Gesell and his co-workers (14) have shown is that insecurity, disequilibrium and in-co-ordination intervene so that there is a break-up or loosening in order to achieve a new integration. For example, the child of $3\frac{1}{2}$ years shows, in comparison with the child of 3, some motor inco-ordination. He has fear of heights and he stumbles and falls often. The tensional outlets becomes exaggerated and we observe nail-biting, nose-pecking, thumb-sucking, playing with sex-organs. There may also be stuttering at this age. There is emotional insecurity leading to jealousy, whenever any member of the family pays attention to some other child. By the time the child is 4 years old he becomes more vigorous ; hitting, kicking, throwing and breaking. He also becomes highly emotional with fits of laughter and rage alternating. He loves to defy parental commands. He also loves to boast. But one of the most significant things of the 4 year old child concerns the vividness of his imagination. He is unable to draw a line between fact and fiction. Consequently, he appears to tell "lies". The Nursery school teacher as well as the parent have to be quite firm in dealing with the 4 year old child. He wants to test his own abilities. He is fond of cycling up on the street and he is fond of visiting neighbours. He also outruns his parents when he is taken out for a walk. By $4\frac{1}{2}$, he becomes more self-motivating. He can start and complete a problem of block building, for instance. Also at $4\frac{1}{2}$, the child questions a great deal and discusses a great deal. He is quite intellectual and philosophic. He is also interested in details. This may lead to embarrassing questions to parents when he wants to know details regarding birth, death etc. There is a progress in his motor-skill so that he can now draw quite well. Another important feature is that he is able to put up with frustrations. Another aspect of his intellectual growth is his interest in letters and numbers and in spatial concepts like front, back, inside, outside etc. By 5 years the child tends to be quite stable and well-adjusted. As Ilg and Ames put it "secure within himself, he is calm, friendly, and not too demanding in his relations with others." (26; 44). He accomplishes what he tries, because, he tries only what he can accomplish. Thus he is more realistic even with respect to his abilities. Another important feature concerns his family relations. He likes his mother and he likes to be near her. He obeys her commands, likes to be instructed and takes permission to do things. So the mother likes him at this age. But this is only short-lived. By the time he reaches six his interests change : the six year old child is ready to go to the school, to a larger environment.

(c) *Later childhood* (6 to 12 years).

In a broad way we may say that the years of later childhood are the years of elementary school. This is the period at which many parents find the child extremely difficult to deal with. At six, the child is more violent, emotionally strongly reminiscent of the behaviour of the typical 2½ year old child. There may be outbursts against the mother. The mother and the home are no longer the centre of his world. He desires to join a larger group and the elementary school teacher becomes a new model to be imitated. This is the period in which the child learns to read, do arithmetic and write. Social growth includes conformity to the customs and conventions of the local group. The period between 6 to 9 may be looked upon as the period of the greatest social imitation. The child of 6 tends also to be extremely negative in his response to others and thus creates anxiety in the mother. Also, he resents criticism, blame and punishment. He loves to win and be praised. "Thus if all goes well, he can be warm, enthusiastic, eager, ready for anything. But if things go badly tears and tantrums : It is difficult to by-pass this age in the child's life nor should we wish to. We can make it a little easier for him and for ourselves by respecting the fact that he is having a difficult time within himself as well as in his relations with others" (26 ; 46).

At 7, the child is morose, moody, withdraws himself and likes to be alone. He wants a room of his own to which he can withdraw and where he can protect his own things. He is now very observant; he watches carefully. He is also more discriminating and ruminating. He often demands too much of himself. So, he is unable to accomplish what he sets out to do. This may lead him to feel that people are against him. He may assert that his teachers and also his parents are unfair to him. There is a big change by the time the child becomes 8 years old. He is now, very eager to try out and make new things and new friends. By 8 years he is quite interested in social relationships. He is quite concerned with what other people think.

This building up of individuality proceeds with considerable tempo in the next three years between 9 and 12. The novelty of the school life is worn off. He is also tired of the routine. So he is eager for new thrills. This leads on to the period of gangs. There is a great desire to rebel against the customary ways of doing things and also a desire to undertake big things. This is the period when the various youth activities like the Scout movement, Seva Dal, 4-H Clubs and so on could be profitably organized to use the energies and ambitions of this age group. At 9, the child insists on being independent. He tends to resist being bossed by his parents. He is more interested in his friends than in his family. The opinion of his friends is much more important than the opinion of the members

of his family. He also tends to worry. He not only worries but he also tends to complain. This is why the 9 year old child is looked upon as 'a potential neurotic'. He complains that his eyes smart, that his hands hurt, that he has got stomach ache. All these complaints are in relation to some disliked task. He feels that the work at school and the work at home are too much for him. By 10, the child becomes docile. He becomes obedient and friendly. So the parents as well as teachers look upon the 10 year old child as a model child.

Thus we find that while the child adjusts himself only to his family and a few neighbourhood peers during infancy and early childhood, now he has to attend a school. Attendance at school involves a vast number of new adjustments to teachers, to school curriculum and routine and to children who are of the same age as well as those who are younger and older. Thus this period of later childhood from 6 to 12 marks many social changes.

According to Freud, this period is what he called the "latency" period, a time of little psycho-sexual importance as compared to early childhood of 3 to 6 when there is the development of the ego and the super-ego and the resolution of the oedipus complex. However, other psycho-analysts look upon this period of later childhood as very significant socially as well as psychologically. For example, Anna Freud (10) asserts that at this time the ego becomes strengthened in relation to the outside world. Sullivan (60) calls this the "juvenile era". "It is the period for becoming social, for acquiring experiences of social subordination to authority figures outside the family, for becoming competitive and co-operative, for learning the meaning of ostracism, disparagement and group feeling" (18 ; 215). However the danger at this stage of development is that the child who is unsuccessful may acquire a deep sense of inadequacy and inferiority which may influence the further growth of personality. That is why successful handling of the problem of the child by the teacher as well as parents and others is very necessary. Success will result in the child's developing a sense of industry and accomplishment.

As regards physical growth, the girls have their growth spurt earlier, between the ages of 9 and 12 while in the boys it occurs between about 11 and 14. Consequently between the years 10 and 15 girls tend to be slightly larger than boys. These differences as well as other factors bring about certain changes socially. Till about 8 or 9 years boys and girls mix freely and play together. But after this there is sex segregation. This may be due to the difference between the sexes in their interests and activities. It may also be due to the social expectations. In any case, the games become clearly sex-linked at this period. Boys playing active vigorous competitive games and girls engaging themselves in more sedentary games.

As the child enters the primary school, he is capable of most of the important intellectual operations like planning and abstraction. He is also capable of both inductive and deductive reasoning within the

limits of his experience and information. As he advances through the elementary school there is a heightened awareness and interest in people as well as in the world at large. There is growth in intellectual team work. There is also increased ability to generalise and abstract. During the school years there is a tremendous gain in knowledge and information. Studies in children's problem-solving behaviour indicate that from age six there is a change from subjective attitudes towards greater objectivity (38). Further there is an increase in the tendency to explain in terms of cause and effect relationship.

While the pre-school intelligence tests involve primarily manipulation, discrimination and attention, the tests for elementary school children involve more abstract reasoning, analogies, vocabulary, commonsense, memory, interpretation of pictures and proverbs and sentence completion (8). By six years the IQ becomes quite stable. The tests are fairly good predictors of intellectual status in *adolescence* and *early adulthood*. But we should be cautious in these predictions. For example Hazink (22) tested and retested a number of youngsters from 6 to 18 and found that over half the children varied by 15 points or more and that a third of them changed as much as 20 points. We may also refer to the investigation of Sontag (58). He compared the children who gained the most with those who lost the most in IQ in a longitudinal study and found that acceleration was related to high ratings of such personality variables as emotional independence from parents. With increasing social participation, there is an increase in aggressiveness, initiative, problem solving, anticipation and competitiveness. This suggests that motivation is an important determinant of intellectual growth.

As regards values and attitudes, Piaget found (52) that the child's morality changes as he grows older. While during the earlier period the child attaches great importance to strict and specific moral rules deriving their force from parental authority, there is a change to more general principles supported by groups of equals. Thus much of the school child's socialization as well as attitudes and values arises out of the interpersonal relations with his friends and associates in the school (40).

The chronological stages of growth and changes occurring during them should not be taken rigidly. There will be individual differences and differences among societies because of different cultural background.

3. *Adolescence* :

In a general way adolescence refers to the process of development and adjustment during the transitional period between childhood and maturity. Popularly this is known as the teen-age, the years from 13 to 19. Poets and novelists have described the difficulties of this stage in the growth of the individual. According to Freud, there

is a great turmoil in the individual between the ages of 3 and 6 when the ego and the super-ego develop. Afterwards from 6 to 12 the child is relatively tranquil. Freud calls this the "latency" period. With puberty the youngster is faced with a disturbingly new and powerful drive which disrupts the tranquility of the latency period. So he experiences many anxieties. There is at this period extensive reading and engagement in philosophical discussions etc. which are viewed as means of avoiding the threat of sex. Some studies support the "storm and stress" hypothesis (64 & 55). On the other hand other studies do not support this hypothesis (31). Thus more careful studies, not only with respect to the adolescence, but also with respect to the parent-child relationship at this age, are necessary in order to test the 'storm and stress hypothesis.'

However, we may draw attention to the 'field theory' put forward by Kurt Lewin (34; 868-96). According to it adolescents experience a rapidly widening life-space along geographic, social and future time dimensions. Further at this stage of development the individual is caught in an ambiguous overlapping between the roles of the child and the adult. He is faced with many unstructured, ambiguous or even conflicting situations. Sometimes parents expect him to behave as an adult; at other times they treat him as a child. These difficulties lead the adolescent, according to Lewin, to develop the characteristics such as conflicts of value, emotional tension, shyness, aggressiveness etc. Presumably in a home, where special efforts are made by the parents to introduce the youngster gradually to mature experiences and to his larger environment, it is possible that these conflicts, characteristic of the adolescent stage may never occur at all.

The physical changes which take place at this period in girls as well as in boys and the quick growth of the body, bring about moodiness, irritability, and emotional tensions. Sometimes the individual may be very active, bordering on hysteria. At other times the individual may be very apathetic and withdrawn. So it is very important that steps should be taken by parents as well as teachers not only to understand his problems and worries, but also to provide him with plenty of sleep and rest on the one hand, and active outdoor life on the other. During the period of later childhood, the interests of the individual are mainly turned outwards. But as the child enters upon adolescence he shows an increase of feeling about himself and about his parents, his brothers and sisters, his friends and others. Thus, at this stage he pays a greater attention to the personal and emotional aspects of life, his own, as well as those of others around him. Part of this difference in feeling is due to sexual development. Part of it, as Lewin has pointed out, is due to the new social situations and the enlargement of the field of experience. The experiences and difficulties at this time also depend upon the parent-child relationship. Many parents may get upset by the changes in behaviour of their boys and girls. These fears and suspicions

of the elders may create difficulties for youngsters. One of the noteworthy features of Indian methods of upbringing is that the parents do not have the dreads which are typical among the Westerners. It may be asserted that the Indian has a healthy attitude towards sex and marriage. Reference may be drawn to some studies in Madras which have shown that the adolescent life is not exposed to the typical storm-stress reported in western studies (49 & 57). A large part of the training of adolescents consists in the development of the control of emotions through understanding and the development of the self. Just as during infancy the child has to learn to control the desire for food, during early childhood anger, during later childhood fear, during adolescence he has to learn to control sex. That is why, probably, ancient Indians stressed *Brahmacharya*. During adolescence the sexual urges become prominent and the aim of the home, the school and the society should be to help the adolescent to understand and control these urges. By the proper development of interest in sports, athletics, hobbies and other methods of self-expression the creative impulse may be given outlets, which lead to the development of personality. It is also necessary that boys as well as girls should be taught facts relating to sex in the years before adolescence. Parents as well as teachers should discuss these problems in an objective way. It has been found that when boys or girls indulge in a good deal of sex talk, the best course is to have a free discussion about these problems by keeping it at an impersonal level.

Among the most striking developments of adolescence are those involving social relationships. As we have seen above, from pre-school years to about 12 or 13 years there is a greater interest in others of the same sex; during the period of adolescence there is an increasing interest in and interaction with the opposite sex. Further, there is also a significant change in the relationship with parents. Resistance to parental authority and to the rigid moral codes imposed by them may give rise to anxiety in the parents. Even though in later childhood the social relationships in the school were important, during the period of adolescence there is a further change. There is a further break from dependence on parents and there is a greater dependence on friends. There may even be hidden or open rebellion, if the parents questioned certain friendships. Here also a reasonable discussion of standards, without any attempt at imposing them on the adolescent, will prove to be very helpful. The adolescent also resents any criticism from older brothers and sisters. Parents as well as brothers and sisters must understand this growing independence of the adolescent. They must help the adolescent to change from the dependent relationship to one of friendship between equals. Independence should not be taken to indicate lack of love. The teacher should also encourage the adolescent to become independent with respect to his methods of study as well as regarding opinions about various social and economic matters. There is a tendency on the part of some teachers to prolong the dependence of pupils by carrying supervision to extremes. - Particularly, when the adolescent

goes to the college or the University he has to behave with a sense of independence because the teacher-pupil relationship at the college level has nothing to do with close supervision as at the school stage. So helping the student to be independent even at the high school level will help him to make better adjustments at the college level.

Thus, in a broadway, we may state that the problems in development at the adolescent level are of two types—problems arising from within himself and problems arising through the conditions of the society in which he finds himself. It is inevitable that difficulties should arise. It must be remembered that every stage of life from infancy to old age has its own difficulties (37). Development does not take place in a simple manner in one direction like the growth of a plant. There are so many aspects of development like the physical, the intellectual, the social and emotional which grow at different rates and so development inevitably leads to difficulties. For example, a child of 13 may have adult intelligence with child dependence. At home he may be emotionally tied to his mother but his school may expect him to behave like an adult and have sound judgement about matters commensurate with his intelligence. It is possible that the parents may also expect him to be mature because he is bright while at the same time they may deny him opportunities for independent experience because he is yet young. His inability to live up to these contradictory expectations may give rise to a feeling of inferiority. The adolescent must cease to depend on others for his security. He must develop the sense of security from within and not from outside. It is the task of the teacher as well as the parent to help him to develop his own inner feeling of personal worth.

Finally, brief reference may be made to another aspect of adolescence which has attracted in recent years considerable theoretical as well as research attention, namely, vocational development (61). In the previous decades, emphasis was laid on abilities and aptitudes with respect to vocational guidance. The aim was to match the personal assets with the job requirements. In recent years there is a greater emphasis on personality and need-structure. It is now realised that various occupations are viewed by the adolescent as being potential in the satisfaction of basic needs. Consequently the way in which an adolescent perceives himself in a possible occupation is very important. Thus vocational development may be viewed as involving a process of role playing and role testing. In a recent study Mooney (44; 57-69), by using a problem check list, found that problems of vocational choice and related educational plans rank high in the enumeration of worries and problems of adolescents. It is the recognition of this fact that has led to the development, in the recent years, of vocational and educational guidance as a very important aspect of secondary education in India as in many other countries of the world. Right aspirations in the period of adolescence and proper guidance will go a long way not only in the healthy

development of the adolescent into adulthood but also in social harmony as well as economic development.

4. *Adulthood and Old age :*

In a rough way it may be said that adulthood extends from 20 years to the end of life. This period may be divided into the following three sub-periods (24) :

(a) Early adulthood, from 20 years to 40 years. By 40 years there are physical and psychological changes accompanying the climacteric in men and menopause in women. So, in a rough way, we may draw the line at this age though there are many individual variations. (b) Middle age, from 40 years to 60 years. During this period, there is a gradual decline particularly in physical strength and agility. (c) Old age, from 60 years to death. As regards the duration of this period, it varies from individual to individual and nation to nation. This division of adulthood is due to improvements in public health and medicine during the last 100 years. In ancient times and even now among the primitive and backward peoples, this division of adulthood may not hold. Among some of the primitive tribes, puberty and the climacteric are used as the biological landmarks. However now adulthood starts 7 to 8 years after puberty and people live long after the climacteric. Medical aids as well as clothing, help to keep men and women of different ages to look, feel and act much as if they were all of the same age.

(a) *Early Adulthood (20 to 40 years).*

One of the important changes, which takes place when the adolescent becomes an adult in modern society, is that he is expected to cope with these problems without the supervision and help of his parents and teachers. Even by 17 or 18, when the adolescent enters the college or the University, he finds a big change in the atmosphere. While in the High School, teachers have a close supervision upon him and give him innumerable tasks, he finds that when he goes to College or University he is thrown upon his own resources. He can do whatever he likes with his time and leisure. In Indian Universities, he is required to put the minimum attendance. In some of the Western Universities even this is not insisted upon. There is another difference. In the traditional joint family an adult, even of middle-age, will not take any independent decision. All the family decisions are made by the head of the family who may be a considerably old man. But in recent years, with the educational, economic, social and political changes in India, the young adult finds himself in a typical modern situation where he has to make his own decisions. For one thing, the rural educated youth will find that his father is incapable of guiding him in the choice of a career because the village old man is ignorant of modern careers. Secondary education as well as College education helps him to become

self-dependent and so many young men have pride which prevents them from going to their parents for help.

In a broadway, we may say that after adolescence, the young individual is ready to become a householder, which involves three distinguishable activities. He has to find a career. He has to marry and set up a home. He becomes a citizen with civic as well as social responsibilities and duties. Each of these problems involves a good deal of choice in modern society. In ancient society, where caste-system was prevalent, the occupation was merely dependent upon the group in which an individual was born. But today, with education and social freedom, the young person and the parents have to think about the career. He has also to think about the place in which he is going to settle down. Till recently a young man could get a job in the place in which he was brought up. Increasingly, we now find, that many of the young men have to migrate to other places. As regards the problem of marriage, the Indian tradition of *kanyadana* is still very strong. According to this tradition, marriage is not a tie between two individuals. It is a relationship between two groups of families. It is true that in the modern days the opinion of the boy as well as the girl is taken into account; it is not a mere matter of parental decision. The parents choose a number of likely persons and ask the boy or girl to make his or her final choice out of this panel. Thus, the modern Indian young men as well as women make their choice from among the persons chosen by the parents for consideration. Adult franchise now gives every young man and woman of 21 years the political right to vote. This brings with it, a number of civic responsibilities and duties. Thus we find that the young man or woman has to make a number of adjustments in different fields. These problems become more complicated, in every field, as time advances. Particularly the problems regarding career as well as marriage and family will be constantly in the forefront throughout adulthood.

Upto about the age of 30, some women as well as men tend to be immature in certain areas of their behaviour. While, at the same time, they show marked increase in maturity in other areas. As we have seen above, life is a transition from immaturity to maturity. The individual has to live up to a number of expectations from the social group in which he happens to live. Thus, new expectations will help the individual to shed immaturity. As important, if not more important, are the achievements of young men and women. With better adjustment, immaturity disappears. However, as ancient Indians recognised very clearly, most adults continue to be emotionally immature. That is why they said that a man takes not only a number of years but a number of births to become mature. This is a clear recognition of the difficulties which face the young adult as he grows. Unless he constantly modifies his behaviour in the light of past experience he will not develop to be a mature adult.

Traditionally education served only children and youth. So till recently the teacher tried to equip himself regarding the problems of childhood and adolescence. But in the 20th century there is a change in outlook. Adult education is a rapidly growing major movement in the field of education, both among the illiterate people as well as among those who have had secondary or even collegiate education. Secondly, it is necessary that the teacher should equip himself with knowledge regarding adult interests, attitudes and ways of learning. There is also another aspect. There is an increasing recognition in recent years that a teacher should have some understanding of himself and his associates in order to become a successful teacher. This also makes it necessary for the teacher to learn about the developmental aspects of adult years. Finally such a study will give the teacher a perspective regarding the objectives of elementary and secondary education.

As regards physique and health we find that in 20's and 30's the health is at its best; mortality rates are the lowest in adolescence and young adult life. That is why the Insurance Companies charge a lower premium for the young adult. During 40's there is an appreciable change in physique as well as in health. An individual during early adulthood can acquire skills, even better than in adolescence. In strength as well as in quickness, tests show that the peak period is between 20 and 30. Most of the sports championships are commonly won in 20's and 30's. Lehman (33) has shown that the most outstanding work among musicians, artists, scientists and other creative thinkers tend to appear during early adulthood. However, he found that the capacity for leadership often does not fully emerge until the middle age or even later. Bayley (2) has shown that there is a slow but continuous rise in intelligence upto mid 20's and remains at that level up to fifties. Similarly Owens (48) has also shown by longitudinal studies that there is a growth in the test scores up to about 50 years. In the pattern of intellectual development we find that memory precedes reason and in reasoning itself concrete reasoning precedes abstract reasoning. Owens found that with increase in age there is a significant increase in the test scores of practical judgement, disarranged sentences and synonym-antonym. Thus we find a difference in results between the longitudinal studies and the older cross-sectional studies. It is possible that if we take the population as a whole there is a decline in the scores after 20 years. But if we take able individuals there is a slight rise in the test scores from 20 years even upto 50 years. Wechsler (65) has shown that when the individual is stimulated by a rich and favourable environment mental growth may continue beyond the age of 15 or 16, even into 20's.

As regards learning, one of the defects of the older person is that he tends to have lack of confidence when he learns new things. That is why he needs a good deal of encouragement. With respect to needs and motivations while a young person may want activity,

an older person may seek rest. Socio-economic and cultural factors also affect needs. It is a well-known fact that the people of lower castes and lower classes, like factory workers, have very little by way of career motivation. They are not even interested in earning more money or having greater security. On the other hand, people of higher socio-economic status seek to improve themselves so that they can improve their status. As regards attitudes and values, while older people tend to be more conservative in comparison with adolescents and young persons, they will have a greater emotional stability. With increase in age an individual may attain increase in wisdom.

Complications of adjustment in the young adult may arise out of his unrealistic ideas of what he wants and what he is capable of. Parental aspirations may also introduce difficulties. Adulthood is the period of achievement for most people. Achievement depends upon the sustained training and interests during adolescence. Studies of achievement have shown that the peak period of achievement in adult years falls between 30 and 40. However, if the adult has high aspirations which are not matched with equally high achievements, he may be faced with an emotional breakdown which may lead to either psychological or psychosomatic disorders. On the other hand, the well-adjusted person is pleasant in his social dealings and is satisfied with life in its various aspects. This is because of a realistic appraisal of himself. Crandell and Preston (7; 239-249) found that the well-adjusted group of middle class mothers had stable value systems and were satisfied with their surroundings. They had confidence in their competence to meet emergencies in day-to-day living. They participated actively in social affairs and had many close friends. Their interests and activities were in harmony with those of their husbands and they had a warm and affectionate feeling for their children. The unadjusted will have emotional tensions which are often expressed in 'worries'. Worry will depend on the problem which a person is facing at the given time and the success or failure he is experiencing in meeting this problem. It has been found that worries regarding money reach the peak around the age of 30 when the individual has a home and has children who are growing up. After 30, there are also worries about health, success in vocation, job security, etc. All these various problems which he has to encounter and the success attending upon these adjustments will influence his concept of his self. The more successful he is, the more favourable his self-concept will be and the greater his self-confidence and assurance. On the other hand, feelings of inadequacy will arise when there are failures in adjustment. Investigations into self-concept have shown that in general the self-concept remains stable throughout adult years (5). Longitudinal studies have shown that there is a consistency in the personality pattern over a period of time (30; 659-681). Similarly McQuitty

(42; 461-482) found that adults who had made good adjustments had integrated personality patterns with a stable realistic concept of self as the core. On the other hand, those who had made poor adjustments, had poorly integrated personality patterns with an unstable, unrealistic, self-concept. Jones (27; 113-128) found that the age at which a boy matures influences his concept of self. The boys who were physically accelerated were accepted well and treated as mature persons by their peers as well as adults ; because of their superior strength they had also prestige in sports. In contrast, the late maturers were treated as children. Their efforts to strive for status looked immature. As a result, they developed certain personality traits like touchiness, aggressiveness, rebelliousness, impulsiveness, all of which prevented good adjustment. By the time they reach adulthood men and women learn that there are certain culturally approved roles for a man or woman at home, on the job and in the society. For example, a man as the wage earner takes the role of the head of the family. He is expected to withstand physical and emotional strain. He has to take decisions in the family affairs. In a similar way, the woman has to learn her role as wife and mother. Maladjustments will arise if there are conflicting concepts of the role which the husband or the wife should play. The learning of the culturally approved roles not only affects marital and social adjustments but also have far-reaching effects upon child-up-bringing and this influences the well-being of the succeeding generation.

(b) Middle age (40 to 60 years).

Middle age is the time when the individual reaches his peak in position, prestige, income and so on. It is at this period that the individual will reap all the benefits of the years of preparation and hard work which precede it. Normally, the peak is reached between 40 and 50. These years are most fruitful for creative work. Most people do not do their best at this period because of maladjustments. Generally middle age is the period when an individual may get leadership in his line of work as well as in various community organizations. If he does not attain success and prestige, it is due to his anxieties and frustrations. The individual may feel that what he has achieved falls considerably short of what he had hoped to attain. Thus his prestige and success will depend not so much on what he achieves as on his attitude towards what he has achieved. If he looks upon his life as a 'failure, he may react realistically by realizing his mistakes or he may resort to escape mechanisms like day-dreaming or alcoholism. Some of these persons may become embittered against society because of the 'paranoid belief that social obstacles have prevented them from achieving what they are really capable of. Even those who succeed may have two kinds of reactions towards their achievement. They may be satisfied with what they have achieved. This attitude will lead them to greater creative work. On the other hand, those who are not satisfied with their success may feel that they chose wrong goals.

The middle-aged person, particularly after fifties, has to change his self-concept because there are changes in his appearance, muscular strength, speed, resistance to fatigue etc. There are also changes in his role. During fifties, his children may be grown-ups with their own homes. So, he cannot look upon himself as a parent. Similarly there will be changes in his sex life. Probably there may also be change in his work. All these necessitate a change in the roles which implies that he must have the willingness to break some old habits and learn new ones. Yet another problem facing the middle-aged person during the fifties is to prepare himself for the coming old age. During early adulthood as well as during middle age, the emphasis is on financial security. But now, he must make a shift to a psychological preparation for old age. The success of this preparation depends upon the type of relationship that he has developed towards his grown-up children. It also depends upon the development of new interests and activities to replace parental duties and, may be, occupational duties. This is what ancient Indians spoke of as the *vanaprastha ashrama*, in which the individual relinquishes his rights and privileges as a parent and as the head of the family. According to ancient Indians, this is the time when both men and women have to consider problems regarding their health and their relation to the society as a whole and the universe as a whole. Yet another aspect of this period is that with the ending of parental responsibilities the husband and wife once again become dependent upon each other for companionship as in the days when they were first married.

(c) *Old age (60 years and beyond) :*

In an arbitrary way 60 years is taken as the dividing line between middle age and old age. There is a wrong belief that because old age is a period of decline, it is a period of 'second childhood'. While it is true that with aging the individual has less strength, vigour and speed of reaction, he is not in a 'senile' condition, because many old men compensate for their loss of strength and speed with skill, information and wisdom. This is possible if there is proper preparation for it in middle age. Otherwise, senility will set in. With mental disorganization the individual becomes careless, absent-minded, eccentric and poorly adjusted, socially. The most important thing is the attitude. If the individual develops an unfavourable attitude towards himself, towards others and life in general, it will lead him to quick senility. It is those individuals who have no sustaining interests after middle age that are likely to become depressed and disorganized. Motivation plays a very important part. The individual who has little motivation to learn new things or to keep up-to-date in his information, in his dress, and in his patterns of behaviour, will be poorly adjusted. With the improvement in medicine, and health throughout the world, the proportion of old men and women to the total population is gradually increasing.

This has led to the development of the new science of Gerontology, which is the science of aging and to Geriatrics which is a field of medical practice concerned with the diseases of old age. Acceptance of old age, it has been found, helps in successful adjustment. On the other hand, resistance to it is a big obstacle in the way of proper adjustment at this period. Many old people react with emotional tension towards their loss of health, loss of occupation, loss of income and loss of persons dear to them. Studies in social adjustment in old age (54) have shown that maladjustment arises out of feelings of inadequacy, of rejection, of being unwanted and self-pity. These lead to anxiety or apathy or negativism and irritability.

Thus we find that the attitude of the individual towards his self, the conditions of life, and the universe as a whole will affect the quality of his adjustment at different ages. If the levels of aspiration are unrealistic and beyond one's abilities, inevitably there will be feelings of inadequacy leading to unhappiness. At every age, an individual must be realistic with respect to himself, his abilities and disabilities. His level of aspiration should be geared to his abilities and to his opportunities. Above all, there should be an attitude of acceptance of limitations, coupled with aspiration and endeavour to attain what is real and possible.

ASPECTS OF GROWTH

When we were dealing with the various stages of growth in the last section, brief mention was made of the several aspects of growth as well. In this section we shall describe the various aspects of growth. It must, however, be remembered that these aspects are not exclusive or independent of one another. They are all inter-related and the treatment in this section, as in the last, is purely for purposes of understanding.

Arnold Gesell who made an intensive study of the development of first five years of life, tried to classify the whole behaviour of the child into four major fields of functional organization: (a) Motor behaviour—including postural reactions, prehension, locomotion and general bodily co-ordination. (b) Adaptive behaviour including the various adjustments made by the child on the basis of its perceptions and orientations. In this he also included the manual as well as verbal adjustments and the ability of the child to profit by his own experiences. Thus adaptivity included intelligence as well as various forms of exploration and constructiveness. (c) Language behaviour, as such, involving expression, comprehension and communication. (d) Personal-social behaviour including the child's reactions to other persons as well as to the social and cultural aspects of life.

Other investigators have, however, proceeded to deal with this problem by taking into account aspects which are more elementary. We might in this section describe briefly these various aspects.

1. *Physical growth and health :*

Extensive studies have been made using both the cross-sectional as well as the longitudinal approach to collect data regarding this aspect. School records are also very important. On the basis of 12 years of growth study at Harvard, Rothney (56; 161-182) writes "we can say with a great deal of assurance that growth is very rapid from birth to the age of 2, that growth tends to continue at a diminishing rate until a period of approximately 3 years before the advent of puberty, rises rapidly until puberty is reached and then falls away quickly to end points at ages between 17 and 19." It is a matter of regret that as yet we have had no studies in India regarding the physical growth of children. It is now well-known that the physical growth and health are intimately related to the study of nutrition and adequate medical care in times of illness. However, nutrition is today dependent upon the socio-economic status of parents. It is indeed a hopeful sign that attempts are being made to provide mid-day meals to school-going children. This step will certainly be a very important one in the promotion of physical growth and health among children and thus in the nation as a whole. Sleep, rest and relaxation also play a very important part in the physical growth and health and this depends upon adequate housing and equipment for the family. Yet another factor which greatly affects physical growth and health is the provision for play, exercise and athletics. Special provision has to be made during infancy, early childhood, later childhood, as well as adolescence for games and athletics. Here again we find that the country has not developed proper programmes in an intensive manner.

2. *Development of motor skills :*

We have already seen that motor development occurs according to certain fundamental principles of growth. Gesell and his co-workers have described the growth gradients of children from birth to 10 years of age in 10 major fields of behaviour (14). Sequences for walking as well as for prehension have been worked out in detail. It must, however, be borne in mind that these schedules provide us only with a guide for determining the stage of a child's development. They should not be used as norms for making specific comparisons because, as we have seen above, motor-development depends upon various factors which affect the child's growth and health. We have already seen above that the developmental stages of the child during the first two years is hardly a reliable predictor of what the adult is going to be. So, any delay in the development of a motor-skill should not be looked upon as indicative of some defect or deficiency. Investigations show that there is a continuous growth in speed of reaction. They have also shown the improvement of motor skills with age. Further it has been found that strength is related to participation in play activities requiring physical exertion. Consequently, parents as well as teachers should

encourage physical exertion among children and also help them in the development of motor skills and in the use of their hands for fine co-ordination. It is today generally accepted that the nursery school programme as well as the elementary school programme should provide the necessary equipment and guidance for the development of the child's motor skills as an integral part of the school programme.

3. *Emotional growth and control :*

We have already seen that the first definite sign of emotional behaviour in the human infant is its general excitement. This diffused excitement in the infant is analogous to the undifferentiated emotional excitement in adults. The various differential patterns of emotional responses occur as the child develops. According to Bridges (4; 324-341) out of the general and diffused excitement specific forms of emotional behaviour like distress and delight emerge at 3 months. At six months distress is differentiated into fear, disgust and anger and at 18 months jealousy emerges. As regards delight, according to Bridges, it is differentiated into elation and affection at 12 months. By 18 months the infant is able to express most of the emotions of adult life. The earliest indication of affectionate behaviour in the infant is excessive activity towards the mother. It is characterised by outgoing activity to reach the mother. As the ability to vocalise develops, affectionate behaviour includes gurgling sounds denoting pleasure. There is also smiling. As the child grows, affectionate behaviour, towards persons and dolls, includes feeding, protection, rocking to sleep etc. Crying in the first few months is due to internal causes like hunger and pain. By 4 months the child may cry to get attention. During early childhood, that is from 3 to 6 years, social pressure tends to reduce the amount of crying. There is a differential kind of social pleasure with respect to this between boys and girls. We have seen that infants respond with anger to minor physical discomforts and interference with physical activity. By the time the child is 18 months old, there are definite signs of temper tantrum when the child pushes, struggles and cries with all his might (4). We have also seen that there is resistant behaviour and negative behaviour when the child is 2 to 3 years old. Goodenough (17) found that during the second year, anger and resistance arise in connection with the establishment of routine habits such as dressing, bathing, eating. The child is made to control his anger and its expression during the period of early childhood, that is, from 3 to 6 years. However, many adolescents and adults are unable to outgrow this stage. Even during infancy as we have seen above fear arises due to sudden loud sounds or sudden loss of support. Jones (28; 136-143) showed long ago that the child of 2 years, has no fear of snake. The child becomes afraid of darkness, of being left alone and of animals during early childhood (3 to 6 years). Later on, the child becomes afraid of ghosts, accidents, strange noises, storms

etc. During later childhood years (6 to 12 years), the child tries to have a control over its fears.

Jealousy is one of the most common and one of the most pernicious of human emotions. It starts fairly early in a child's life and is commonly directed towards the new brother or sister who is born. The child may express jealousy verbally or he may even express it physically by attacking the new comer. On the other hand, he may also express too much concern and affection for the baby. He may express it indirectly by not sleeping, not eating or by a lapse in his control of toilet functions. Jealousy is a response to situations which mean frustration. It is a response which occurs toward persons who threaten to take away something, or interfere with that which is felt to belong to oneself. Jealousy may become an obsession by completely taking possession of the individual and controlling all his thoughts and behaviour. Jealousy starts as sibling rivalry. We may also notice jealousy as a response when the child is sitting with his mother and a third person claims that the mother belongs to him and not to the child. Generally, jealousy is regarded as something negative and undesirable, something to be avoided, discouraged or even banished. But jealousy may have a positive role to play in the child's life in the same way in which fear has a positive role. It is true that when jealousy is excessive it is neurotic and becomes dangerous for the growth of the individual. But a small amount of jealousy during childhood, adolescence as well as adulthood may serve a real and positive purpose. If jealousy leads to rivalry it may turn into anti-social behaviour. On the other hand, if it leads to self-effort and self-improvement it may be a great source of energy for self-development. The parent as well as the teacher can reduce occasions for jealousy by being very objective when they praise children for their efforts and achievements. We must avoid making comparison between one child and another. It is much better to make comparisons between the child's previous and present achievements in order to spur him on to better effort. Otherwise the child who is jealous may become convinced that nobody likes him and this may result in behaviour problems.

As the child matures, he outgrows a number of infantile and childish emotions like crying, temper-tantrums, fear and jealousies. With growth he gains emotional control. But emotional control is also associated with the socio-economic status of parents. Emotions arise primarily as a result of the blocking of satisfaction of the dynamic needs of the child. When the child's need for affection is frustrated, there will be disorganized behaviour. Parents as well as teachers have to understand that frustrations are inevitable in life. So the child should be taught satisfactory and desirable ways of meeting frustrating situations. Healthy social development requires that emotions should be controlled and channelled into desirable activities. Often, teachers as well as parents try to reason with the child or the adolescent and persuade him to behave in a better way. They assume

that changes can be brought about in behaviour through reasoning and by showing the child his inconsistencies and making him understand what is inappropriate and undesirable. Sometimes this approach will be quite effective. But merely knowing the ideas and wishes of the parent or teacher and accepting them uncritically does not lead to character development. It does not make one a responsible, self-directed individual. There is now a change in outlook with the development of the dynamic concept. Child behaviour is looked upon as something which is motivated by conditions and forces which are deeper than thinking and reasoning. This has given rise to the understanding of the child's motives and feelings. Instead of adopting a critical attitude towards the child and adolescent, we now try to help him to resolve his conflicts. The school can help the child develop more mature behaviour along emotional lines by helping both the control of emotions and the expression of emotions. The child has to learn to control his feelings which may offend or injure others or interfere with group activities or lead to destruction of property. Thus growth in emotional control occurs when the child learns to respect the rights and feelings of other people and gives less consideration to his own rights and feelings. The school must also provide an adequate outlet for his emotions through games or group discussions, private conferences with counsellors etc. The teacher must be aware of the emotional aspect of the child's sulkiness and impertinence. Another major aspect of emotional growth consists in the learning by the child to control himself internally. From externalized control there should be a transition to internalized control. The emotionally mature individual is one whose control comes from within.

4. *Language growth :*

Speech is perhaps the most valuable adjustment mechanism possessed by human beings. A man uses speech to give vent to his feelings in his social contact with others and in making others do certain things. Man is able to understand others and himself through language. Cultural transmission is largely dependent on language. While the ability to acquire language is innate, every language, including the mother tongue, has to be learnt.

In recent years, several studies have been made with respect to language growth. Gesell and Thomson (16) report that at 8 weeks 42% of the babies observed cooed, while by 12 to 16 weeks more than 75% showed this behaviour. By 5 months some babies are able to combine some vowels and consonants and repeat them in succession to the great delight of their parents. The child also uses gesture language including efforts to take, avoid or reject. By 52 weeks 88% of the children can say one word or more, but long before this, the child can comprehend the words of the mother. This comprehension is based not merely on the interpretations of the words heard, but also upon the facial expression, the gestures, the

tone of the voice etc. Throughout life we find that recognition vocabulary is far greater than the spoken or active vocabulary.

According to Piaget (51) there is a growth from 'ego-centric' to 'socialised' speech in the child. In ego-centric speech the child "does not bother to know to whom he is speaking nor whether he is being listened to he feels no desire to influence his hearer nor to tell him anything". Piaget estimates that about 38% of children's remarks fall into this ego-centric category and the percentage declines as the child grows. In another investigation (23; 227-234) it was reported that 40.7% of the spontaneous remarks of college students in conversation were ego-related. However, further research is needed to find out the usefulness of Piaget's hypothesis.

Throughout the preschool years, the child's vocabulary increases rapidly. However, the size of the vocabulary depends upon his socio-economic environment (41). Another index of language development is the growth in the sentence length. At 2 years, the child uses sentences of two words to express his thought, but by 5 years, he can speak sentences of 4 to 5 words in length. By 6 years, the normal child uses practically every form of sentence structure. Most children speak fluently by the time they are 3 years old and enjoy using their verbal skill.

Of all school subjects reading is the most important as it forces the pace for a good deal of school work. A child is likely to experience severe frustration, if it does not get along well in reading. In the West, the general practice is for the child of six to enter the first grade of the elementary school. But investigations have shown that even at six years some children are not ready for reading because of physiological and mental immaturity. As we have already seen, when the child is pushed beyond his level of maturation, there is not only failure, but also adjustment difficulties. Unless the child can speak clearly so that he is understood by others and unless he has got adequate vocabulary, he is not fully prepared to read. Long ago Monroe (46) devised one of the best tests to measure reading readiness. These tests include memory forms, ocular-motor control and attention, motor speed, auditory discrimination of words, auditory memory, vocabulary, word articulation, speech facility, sentence length etc. After the learner has mastered the fundamental skills in reading, he enters into, what Gates (12) calls, the intermediate reading stage. According to Gates, the child reaches this stage when he is in the third grade and continues it in the 4th, 5th and 6th grades. This stage is "characterized by greater speed, more advanced techniques, and greater flexibility. Word recognition in reasonably familiar material has now become so effective that the pupil can and does give his mind more fully to the thought." Finally the child reaches the stage of "mature reading which is characterised by gradual improvement in efficiency, increased scale in word recognition in working out the pronunciation and meaning of new words in

recognizing words during reading on the basis of increasingly superfluous tools, better phrasing and organisation, higher speed and greater flexibility.³⁰ Some children may reach this stage very early.

There is a close relationship between thinking and language development. Thinking depends upon the meaning and significance of words. Words are substituted for original situations. As Dewey puts it, "thinking begins as soon as the baby, who has lost the ball he is playing with, begins to foresee the possibility of something not yet existing—its recovery and begins to forecast steps during the realization of this possibility and by experimentation to guide his acts by his ideas and thereby also test his ideas." (9). Thus thinking is the tendency to explore and manipulate and language plays a very important part in this. Failure on the part of the child to notice differences leads to errors of generalization. This is why intelligence tests use the ability to perceive similarities and differences in making up items for the test.

5. *Social Development :*

In the previous section, we have already seen how the child changes even in the first year of life from being a passive member of the family who receives attention from others, to one who initiates social contacts. Even at 4 weeks, he stares at faces closely and a few weeks later, he cries to be picked up. The desire to be with others continues and expands as he grows older.

In a broad way, it may be stated that social development has two apparently contrasting aspects. There is, first of all, the process of socialization by which the child becomes a typical member of the group in which he is born, his caste, community, region etc. On the other hand, he also progressively expands his social horizon so that he is 'at home' with people of other cultural groups. Anthropologists like Margaret Mead (39) and others have studied the way in which an individual becomes a typical member of his social group. These studies have shown that social behaviour is learnt behaviour. Miller and Dollard (45) asserted that children learn through unconscious imitation in the first 2 or 3 years of life. They showed that children "pick up" their traits and habits of behaviour from their parents and others in the family, even though no conscious or explicit attempt is made to teach them. Lippitt and others (35) found that the group member is likely to imitate the behaviour of other members of the group to whom he attributes power. This theory of learning through unconscious imitation helps to explain the process by which identification with parents develops in the child. Long ago, Freud used this concept of identification in order to explain the mental development of children. Mowrer (47) elaborated this theory of identification and showed the influence of rewards and punishments on the imitation of parents by children.

Another line of research which helps us to understand social development is the study of the formation of groups and interaction of the members of the group. By meeting children of the same age, peer groups, and by participation in group activities, there is a broadening of the sphere of social sensitivity in the child, so that he is able to react to people who are not members of the family. This participation in peer-group activities enlarges his sympathy and his ability to act for group-goals at the sacrifice of ego-centric satisfactions. Further, by participation in peer-group-activities the child learns the social attitudes and habits which are characteristic of the group. It may be stated that the task of education is to help the child to become a member of a wider social group than that into which he is born. On the other hand, education may be and sometimes is used to reduce the social group. Havighurst and Neugartem (21) pointed out that the educational system in United States is geared to middle class values and expectations. Similarly Harding (19) has shown that social attitudes and prejudices begin to be formed by the age of 5 and that by the age of 14 they have been crystallised in the vast majority of children. This is how participation in the peer group build up prejudice and ethno-centricism. Taba and others (62) have shown that mere information about other groups and races is not as effective in reducing prejudice as living and working and playing with children of other groups. However, this may lead to conflict between family norms and peer-group-norms. At present in the rural areas as well as among many of the city families, local groups tend to confine and constrict a person's social life and outlook. One of the characteristics of modern society in contrast to societies of the middle ages is that the individual tends to belong to different groups pursuing different interests. Some of these groups may be national, some international. Participation in such group activities enables the individual to become free and overcome the constraints of the smaller group and its limitations.

Another important concept which helps us to understand social development is the concept of 'social role'. According to Parsons and Bales (50), a role is a unit of culture, a set of expectations of behaviour. Every individual is expected to behave in a certain way because of his position in a social group. A person, for instance, has to take on the role of the father, the son, the student, the teacher, the employer, the employee, the husband, the wife and so on. As the individual grows up he learns to play a great number of roles. Essentially the learning of a role consists in an internalization of the expectations concerning the role and of applying these expectations to one-self. This learning, if it is successful, enables the individual to become a good member of the group. It enables him to learn the moral rules as well as the rules of games and other social relations. Each individual has to learn a number of social skills so that he can make harmonious social adjustments at home, at school and in the world at large. A person's ability to get along with people is most significant both for individual mental

well-being and for social progress. How well a child or an adult adjusts himself to other people, at any particular time, depends to a large extent upon his personal development and his past experiences.

6. *Growth of Intelligence :*

Probably in no other field of growth there has been so much research and progress as in the study of growth in intelligence which is, though not very correctly called, mental growth. We have already seen that Gesell and others have provided detailed inventories of the mental growth of children below 3 years. All the various revisions of the Binet scales deal with children above 3 years. More recently Wechsler and others have developed scales of intelligence tests to measure the growth among children, adolescents and adults. Individual mental curves as well as average curves for a group of children indicate that mental growth proceeds very rapidly during infancy (0 to 3 years), and early childhood (3 to 6 years). As we have seen in the last Chapter, the tests given at the pre-school level are not dependable as indicators of the later level of intelligence. In a general way it may be stated that each child must pass the 3 year mental level to rise above the status of idiocy and the 8 year mental level to rise above the status of an imbecile and 11 years to be above the level of a moron. A child's ability to grasp a situation is limited both by his immaturity and by his lack of pertinent experiences. Growth in intelligence is evidenced by the increase in speed, facility and adequacy with which a person deals with the intellectual situation.

Most of the early studies were conducted on children from rather stable educational, cultural and economic backgrounds. Consequently these studies yield high correlations between IQ's obtained from tests given at successive ages. This led to the concept of the constancy of IQ. In general it may be stated that after six years there is constancy of IQ. But many recent studies which have been conducted among children, for whom significant changes had taken place in some aspects of the environment, have revealed that there are considerable changes in the IQ. On the basis of the analysis of various studies bearing on the problem of IQ changes, Garrison makes the following generalizations : "In the first place intelligence test scores obtained during the first three years of life show a smaller correlation with test scores obtained five or six years later than a test scores obtained at age seven and age twelve or age thirteen. Secondly, the longer the interval existing between the tests, the lower the correlations found between the scores obtained from the two testings. Thirdly, intelligence test scores are affected by changed environmental conditions to a greater degree than had been supposed by early investigators. Fourthly, varying factors related to the mental and emotional life of the child have an important bearing on his performance on mental test items." (11 ; 193). In the previous Chapter we have discussed the results of a number of studies regarding the influence of environment on the growth of intelligence.

We may make a few observations regarding the problem of the age at which growth of intelligence reaches its limit. Long ago Terman (63) set the age of 16 as the period at which mental growth reaches its limit. Recent work of Kuhlmann (32) and Wechsler (65) have shown that while for the vast majority of individuals mental age ceases by about 15 or 16, those below average cease to grow earlier, while those who are superior in intelligence continue to grow even in 20's. It has been found that the scores from tests show very rapid growth in infancy, rapid to somewhat moderate growth throughout childhood and the curve slows down during the late teens and the early 20's. The direction of the curve after 20's varies with the type of tests used and the type of populations tested. It has been found that such characteristics as vocabulary and information continue to be maintained or increased to advanced age, while general reasoning ability, discrimination of spatial relations and arithmetic computations remain steady or may even drop off. Consequently, at the age of 50, the abilities in separate tests are much more widely spread than in the 20's. According to the present evidence, some people start losing their mental abilities when still in their early 60's, while others continue to carry on their work in an efficient manner even in their 90's (29).

7. *Growth in knowledge and understanding :*

We can now refer briefly to the growth in other aspects of intellectual development like perception, learning ability, memory, concept formation, problem solving and decision making.

The sense organs of the new-born are not ready to function till a few weeks later. The beginnings of perceptual growth become apparent when the eyes become co-ordinated and the child looks at such objects as a lamp which emerge from the general background. This process of perception constitutes one of the first observable aspects of mental growth. With experience the child builds up perceptions of space, time, movement and distance. Very early there is the perception of movement. Later on when the child sees objects and moves his arm to reach for them depth perceptions and other aspects of space perception emerge. Similarly there is growth in the perception of sound, taste and pressure. Ames (1; 78-125) has made a detailed study of the development in the perception of time in the child. By 5 years 50% of children are able to respond correctly to such questions as "How old are you?", "When do you go to bed?". By 4 years they can answer such questions as "when is your next birthday?" "When do you get up?", "When do you have your meals?", "Is it morning or evening?" By 5 years they can answer such questions as "How old will you be, next birthday", "what day is today?", "Name the days of the week, etc." By six years he can inform how long he studies in the school and what grade he is studying in. By 7 years he can tell the time, the season and the

month. It is only by 8 years that the child can give the day of the month, the name of the year and the name of months.

As regards learning even babies of a few days of age are able to adjust themselves to a 3-hour or 4-hour feeding schedule and cry a good deal when there is a change in the schedule. Experimental studies show that the 3-month old infant can be conditioned. The rapidly growing perceptual discrimination and also the increase in the span of attention facilitates the advance in ability to learn. The child of 8 months can easily reach negatively to the container as well as the smell of medicine. As the child grows he builds up associations between stimuli that occur together in time or place and form many habits in early years. One of the most impressive aspects of learning is the learning of speaking and the learning of various motor habits. Once these habits are well formed during the infancy and early childhood within six years of age, new learning of contrary habits becomes more difficult. It is then necessary to unlearn or change the already formed patterns of behaviour before new ones can be established. This is one of the reasons why adults may find certain forms of learning very difficult.

Detailed studies have also been made of the growth in memory. According to Hurlock and Schwartz (25), the developmental schedule of memory is as follows : Memory of an impressionistic kind appears in the first half of the year and instances of true remembrance appear by the end of the first year. During the first year memory is only aroused by sensory stimuli. With the learning of speech the child is able to remember ideationally by the end of the second year. During the first and second years the memory is stronger for persons and objects than for situations. During early childhood, from 3 to 6 years, situations become significant factors in the child's memory. Also the emotional quality of the impressions influence memory. By 3 years the child can recount the story heard a few days ago and he can also give information about past experiences. This is the reason why Binet tests as well as other tests of intelligence make use of memory particularly the immediate memory span for digits. The normal immediate span is two digits by $2\frac{1}{2}$ years, 3 digits at 3 years, 4 digits by $4\frac{1}{2}$ years, 5 digits at 7 years and 6 digits at 10 years of age. Memory curves show a continuous increase, with age in the ability to memorise poetry and non-sense syllables. However, there is no relationship between age and readiness as measured by the savings score (59 ; 242-250).

With the growth of perception, learning ability, and intelligence, there is a growth in the child's conception of classes of objects and casual relationships. Piaget (53) postulates that the child's concepts pass from immediate simple relations of things experienced together to general abstractions involving reasoned relationships. The young child starts with differentiations of large and small, few and many and gradually progresses to counting and later on to adding, subtracting

etc. His first reasoning of cause-effect relationship is from direct experience of things occurring together and in sequence. As his experience grows he learns more about the relevant factors and his reasoning becomes more adequate. This can often be improved by direct teaching such as pointing out inconsistencies and the experiences that force recognition of the incompatibility of previously assumed relations.

One of the main aims of education, as it has been formulated in recent years, is to help the child develop problem-solving behaviour. Traditionally, it was assumed that the elementary school is an institution where the 3 R's are taught and the child is made to recite information. It was assumed that problem-solving was a higher mental process that should be deferred to the High school stage where algebra and general science are taught. Investigations of problem-solving by the pre-school children have shown that children at all ages are faced with problems and that even pre-school children are able to offer solutions to problems within the grasp of their maturity and experience (43). During early childhood (3 to 6) and middle childhood (6 to 12) years children can deal with the problems of the world about them.⁹ They should be encouraged to deal with their problems themselves so that they can learn to think more clearly and avoid irrational solutions to simple everyday problems of the world. They cannot only think clearly about the problems concerning their physical world, they can also solve problems in the social realm. Modern industrial-technological society is a rapidly changing society. Consequently old solutions are not adequate. Further, there is no one correct fixed way of responding, since changes take place constantly. So there is a need to help the child to develop the problem-solving attitude so that it can realise that there may be several possible solutions and that several solutions should be tried in order to get at the best solution. Long ago Kohler showed in his investigation with the chimpanzee that exploration and elimination are characteristic of problem-solving behaviour. Children who lack self-confidence or who are over-reliant upon adult approval may be handicapped in exploration. One of the basic things to remember is that problem-solving behaviour is a learnt type of behaviour. So the aim of modern education is to build up the curriculum as well as teaching methods which may promote problem-solving behaviour.

Another very important aspect of intellectual growth is decision-making. Because of the changing society and developments in technology, the individual has to develop a set of values which will enable him to make sound decisions and feel responsible for his decisions. One of the signs of an educated person is that he has a set of values which guide him in his life. Decision implies choice and choice involves inhibition. One has to learn to inhibit ideas and actions which are incompatible with the desirable behaviour as set up according to one's values. The ability to choose oneself has to be learnt

gradually. Parents and teachers should help the child in forming decision making habits and also in taking full responsibility for his decisions and actions.

8. *Growth in creative expression :*

There is an erroneous belief that creative ability is to be found only among gifted persons. As a matter of fact creative behaviour is an act of self-expression, a realization of something from within the individual. It arises in situations calling forth imagination, initiative and originality. Such situations abound in the life of every individual from childhood onwards. In order to understand self-expression we may contrast it with imitation. In imitation, the child's responses are patterned after the expressions of others, as for example, in folk dances, or classical dances. Similarly the teacher may ask the child to produce some pictures or some objects. On the other hand, in the case of self-expression the child's responses are motivated by his own feelings and ideas and are in terms of his own ability and age-level. It is an expression of his own feelings and ideas. Lowenfeld (36) has shown that self-expression involves the child's own level of independent thinking with freedom and flexibility. On the other hand, imitation involves expression according to another level, dependent upon patterns involving inhibition and restriction. In make-believe play the child explores and experiments with the things around him based on his own experiences. The girl, for example, may take a toy and may try to purchase milk from the milkman to feed the baby. Similarly the boy may imagine himself to be a soldier and ride an imaginary horse and fight an imaginary soldier. Thus the child creates a world out of his own experiences. Similarly the child may express himself through song and dance. To give a concrete case a child of 3 years when asked to sing and dance would ask whether she should sing the song she learnt in the Nursery School or her own. When she was asked to sing her own song she would put in words and situations felt by her and make the appropriate movements. In the Nursery school as well as in the primary school, children like the fundamental rhythms such as running and galloping. As they become more proficient and develop confidence in themselves, they become more free in their expressions. Creative dramatics satisfy the basic needs of children to achieve, to assert, to belong and to win the approval of others. When they learn to express themselves there is also social and intellectual growth. Similarly, they can express their feelings through painting and drawing. But the development of self-expression cannot take place through the application of rigid rules or by a formal curriculum. One of the greatest obstacles to the growth of creative expression in children is the critical attitude of parents, teachers and others. They should realize that the purpose of such activities is to encourage the growth of the pupils in creative expression rather than art production. The main thing is not the product but the

fact that the child explores, experiments and recreates on the basis of his own feelings and understanding. Consequently too much interference on the part of parents and teachers is a big impediment to the development of creative expression. Another obstacle to the growth of creative expression is lack of stimulation. Absorbing interests rather than mere routine life is necessary for self-expression. The teacher himself and the school programme must be quite absorbing and inspiring. A teacher who lacks enthusiasm and originality cannot stimulate the development of creativeness among children. Another basic factor in the growth of creative expression is the understanding on the part of the teacher of the uniqueness of each child. If this uniqueness is understood and respected the child will be stimulated to express himself. The inhibited child must be stimulated to express his inner conflicts and desires and the un-inhibited child should be made to express his thoughts and feelings through different kinds of media. The aim of the teacher should be to help the child to develop expression, appreciation and self-evaluation rather than the development of superior skills in art. The fundamental aim is self-expression rather than attainment of any skills in art.

THE DEVELOPMENTAL TASKS

We may close this Chapter by referring to the concept of 'developmental tasks' as enunciated by Havighurst (20). "A developmental task is a task which arises at or about a certain period in the life of the individual, successful achievement of which leads to his happiness and to success with later tasks while failure leads to unhappiness in the individual, disapproval by the society and difficulty with later tasks." (20 ; 2). Taking into account the various aspects and stages of growth of the child and also the requirements of the society Havighurst has given a number of tasks which the child has to learn at different stages. According to him some of these tasks arise mainly from physical maturation, for example, learning to walk during infancy or learning to behave in a way acceptable to the opposite sex in adolescence and learning to adjust oneself to the climacteric in middle life. Some tasks arise primarily from the cultural pressures of the society, as for example, learning to read or becoming aware of one's duties and responsibilities as a citizen. A third source of developmental tasks consists of the personal values and aspirations of the individual. A clear understanding of the concept of developmental task is very useful for teachers as well as for parents. It helps them grasp clearly the purposes of education. "Education may be conceived as the effort of the society through the school to help the individual achieve certain of his developmental tasks." (20-5). It also recognises the concept of readiness which we have described in a previous Chapter.

1. *Developmental tasks of Infancy and Early Childhood :*

Between the ages of 9 and 15 months the infant is biologically ready to walk. With stimulation and aid from others the child learns to walk. Another task is to learn to take solid foods. The infant's digestive system develops, so that in the second year he can take solid foods and he gradually ceases to use sucking as a means of food taking. The third task he has to learn is that of talking, to make meaningful sounds and to communicate with others. The infant has also to learn to control the elimination of bodily wastes. He has to learn to urinate and defecate at socially acceptable times and places. During early childhood he has also to learn sex differences and sexual modesty. He has to be taught to behave like a boy. He perceives the anatomical differences. The child has to form simple concepts of social and physical reality. As he grows he discovers regularities and makes generalisations. He forms concepts and he learns names. His later development depends upon the concepts he forms during childhood. He has also to learn to relate himself emotionally to parents and siblings. Even during the first few months, as we have already seen, the child learns through unconscious imitation, identification with parents and others in position of prestige. The way in which he is able to relate himself emotionally to other people during these years of early childhood plays a very large part in determining whether he will be friendly or cold, out-going or introversive in his social relations later on. Finally, the child has to learn to distinguish between right and wrong and develop a conscience. He has to abandon certain likes and dislikes and by internalizing the punishing voice of his parents he has to learn to discriminate between what is approved and what is not approved and thus lay the foundations for self-direction.

2. *Developmental tasks of middle childhood (6—12 years) :*

The child at this period goes out of the home and enters the peer group. He also learns to participate in organized games and in work appropriate to his age. He has to learn adult concepts, logic and symbolism. The most important developmental task in this period is learning the physical skills necessary for ordinary games like throwing and catching. He has also to learn to handle simple tools. Most of these skills are taught to the child by other children. The school has only to provide the necessary equipment. The teacher may have to organize play-groups so that the more awkward youngsters can learn at their own rate without being punished by the age mates who are more skilled and faster. Another task is to develop wholesome attitudes towards oneself and one's body. The child has to develop to look after his body through cleanliness, correct diet and regular health habits.

In order to build up wholesome attitude towards his body he has to be informed about the facts regarding animal and human

reproduction before puberty so that his attitudes towards sex are healthy without either guilt feelings on the one hand or complete servitude to the sex impulse on the other. The child has also to learn to get along with his age-mates. He must learn the 'give-and-take' of social life among peers and he must learn not only to make friends but also how to get along with enemies. At this age the child goes out from the family circle to the peer group. He gets more satisfaction from the peer group than from the members of his family. He has also to learn to meet strangers. Thus by 9 or 10 years the social personality of the individual is fairly well developed and these foundations serve for the future development. The child has also to learn the appropriate sex role. This is based on the identification of the child with the parent of the same sex in early childhood. Another task which the child has to learn is the mastering of the 3 R's. These skills are developed in this period. By the time the child is 12 years old he has mastered reading, writing, as well as arithmetic. There is hardly any growth in the fundamental skills after 12 and, as we have seen above, it is only after six that there is "readiness" to learn these basic skills. So it is a waste of time to make him learn these skills before six. Yet another task is to develop concepts necessary for everyday living. These concepts should grow out of concrete experiences and should be true to reality. So the school curriculum should provide this concrete experience. It should not be mere verbal transmission. The child also develops conscience or inner moral control and respect for moral rules and a scale of values at this time. This is based on the process of identification with parents. As we have seen above respect for moral rules is imposed on the child by the parents to start with. As Piaget has shown, later on the child learns that rules are necessary and useful in any social enterprise from games to Government. The teacher's personality as well as the standard of behaviour of the peer group is very important in this respect. The child has also to learn personal independence. He has to learn to make plans independently of the parents and other adults. In other words at this period he has to outgrow emotional dependence on parents. Indian parents as well as teachers have to learn that children between six and twelve can become independent and should be helped to become independent. According to traditional Indian notions this aspect does not receive adequate recognition. The aim of the elementary school must be to promote the personal independence of their pupils. It must teach them how to study and learn independently and also to plan a part of the school programme and learn to discuss and criticise the results of their planning.

3. *Developmental tasks of adolescence :*

One of the basic tasks of an adolescent is to achieve new and more mature relations with age-mates of both the sexes and to behave as an adult among adults so that he can work with others for a

common purpose. He has also to learn to lead without dominating and to have affection for parents without dependence upon them and respect for adults without dependence. This is also the period when the individual should think of economic independence and select and prepare for an occupation. It is to-day realised that one of the chief tasks of the school is to give vocational guidance. Another important task at this period is to prepare for marriage and family life. The Indian school system has not yet begun to give any attention to this task but it must be stated that parents and relatives at home prepare the adolescent for it. The adolescent has also to develop intellectual skills and concepts necessary for civic competence. He must develop concepts of law, government, economics, social institutions etc. He must develop language skills and reasoning ability for dealing effectively with other human beings.

4. *Developmental tasks of adulthood :*

(a) An individual in early adulthood (20 to 30 years) has to learn to manage the house. He marries and sets up his own home at this period. He also gets started in an occupation and becomes a full citizen with civic responsibilities. He has also to learn to find a congenial social group by becoming a member of some club or social service league or some other voluntary organization.

(b) Among the developmental tasks of middle age (30 to 60 years) is the task of maintaining and improving the economic standard of living. The individual has to assist his children particularly of the teen age to become responsible and happy adults. He has to develop adult leisure time activities. As we have seen above, after 40 there are changes in the body. The muscular strength diminishes, the neuro-muscular skills also diminish. So the individual has to learn to accept and adjust himself to these physiological changes of the middle age. He has also to learn to make adjustments with his parents who are in old age.

Among the developmental tasks of later maturity (60 to 75) are the further adjustments of the ageing process particularly the cardiovascular system, the kidneys and the joints. There must be adjustment to retirement and to reduced income. He must learn to become affiliated with the people of the same age group. In order to meet the social and civic obligations he has to keep abreast current forces instead of losing interest in them. Before concluding this section we might add that at this age according to the ancient Indian tradition and according to the modern psychological and psychiatric knowledge, the individual has to learn to make his adjustments with the society as a whole and the universe as a whole by paying more attention to self-realization. Havighurst does not deal with this aspect though it is really most basic.

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Learning is the focus of the educational programmes. The main aim of education is to produce desired changes in behaviour in children. The teacher tries to accelerate the process of acquisition of such changes by the pupils and tries to make them a part of the child. In other words, one major aim of education is to maximize learning.

What is learning ?

We all know what we mean by learning. We talk of learning in connection with animals like the dog. In schools we talk of learning of children. Some children seem to be learning faster than others. Those children who learn faster show certain changes more rapidly than other children. Learning takes place outside the school also. Children have different kinds of experiences, both in and out of schools, and show varying changes in behaviour. We designate such changes by the general term 'learning'. Learning, thus, is acquiring changes in behaviour as a result of experience.

This short and simple definition of learning is sometimes not helpful in indicating the psychological nature of the process. Learning is a complex process. The following definition of learning is suggested to draw attention to the complexity and the nature of this process.

Learning is the process by which an organism, as a result of its interaction in a situation, acquires a new mode of behaviour, which tends to persist and affect the general behavioural pattern of the organism, to some degree.

There are many things to which the definition draws attention.

This chapter will discuss the various aspects of this process. The definition suggests that learning takes place when an *organism reacts in a situation*. Learning consists in the *acquiring of* new modes of behaviour or adjustment. Such a change in behaviour is *retained* by the organism to some degree, and is *utilised in other situations* to some extent.

The definition will become clear as we proceed with discussion of the process and nature of learning.

Learning in school

The main concern of the teacher in one way or the other is learning. The teacher wants to ensure quick and lasting learning in the pupils. In a school situation various elements are involved in the process of learning. In the first place, the learner or the pupil is involved. Unless the pupil is prepared or enabled to learn, learning cannot be effective. The second element is the experience, or, the situations providing such experiences. Pupils learn in interacting in some situations. These situations are provided by the school and the teacher organises them for the pupils. The teacher is, therefore, the third important element. However, the school is a useful agency in learning not only because of the teacher as an organiser of learning experiences, but also, and more so, because it provides an environment in terms of the groups of pupils and teachers. This constitutes the 'climate', i.e. the environment which may stimulate or retard learning. The school climate is the fourth element in school learning.

The task of the teacher is to organise learning experiences for children and to help prepare stimulating group climate. The teacher cannot *make* a child learn. He can, however, provide appropriate situations for the child who would learn by reacting in such situations. Such situations, and the group climate of the classroom and the school, help in making learning more effective.

Learning is not confined to school subjects alone. The school strives to provide opportunities for many-sided learning of the pupil. There are various kinds of learning in a school.

Cognitive learning : The school fosters cognitive learning in the pupils. The pupils attend school to learn new concepts and their inter-relationships. All subjects deal with concepts and generalisations.

The concepts help children in developing thinking. The school curriculum widens learning in terms of the concepts. The concepts enable pupils to understand their experiences in a perspective. Learning of concepts can be made more effective if the related concepts are presented to the child. This is the function of the curriculum, to prepare learning units composed of concepts which are related to, and grow out of, the concepts already familiar to the child. The concepts, in that case, do not hang loose, but are well coordinated and woven into systems which become more meaningful. Concepts can be acquired effectively if these are accompanied with meaningful experience. By associating a concept with real experience, it is made part of the child's life. The concepts evolve from simpler to more complex ones. The concepts, whether simple or complex, are better learned, if these are expressed by the child in some form or the other. The concept of helicopter can be better learned if its picture is drawn by the child, or if its model is prepared, or it is described in words.

Equally important aspect of cognitive learning is the acquisition of generalisations. Cognitive learning matures in the learning of generalisations. The older method of organising this aspect of learning was the deductive method—presenting a generalisation and making the pupil apply this to various experiences. It was later thought that generalisations can be better learned through induction, developing generalisations through observations which reveal the working of the generalisations. Pupils in a good school learn the concepts in sciences and mathematics through induction. In either way, the pupil should be encouraged to discover for himself evidence for a principle or a principle explaining several facts.

Attitudinal learning : The school pays, or should pay, attention to the learning of attitudes and values. Attitudes are generalised dispositions for certain concepts, things, persons, groups and activities. Attitudes are learned in the process of development of the feeling of belonging to the group. Attitudes are a kind of group norms. When the child identifies himself with a group, and develops a sense of belongingness for the group, he starts acquiring the prevalent attitudes. So, the best way of fostering attitudinal learning is to develop appropriate group norms. A pupil in a Public school develops a specific attitude towards dressing, because the sense of belonging to the Public school is highly developed in him, and the Public school generates certain norms.

Related to attitudes are values. Values have the element of preference, of evaluation. The same principles, as in attitudes, apply to values. The values which are accepted by the parents, teachers, peer groups—by what is called in psychology ‘significant others’—are acquired by children. Group norms are important here too.

Learning of skills : Various kinds of skills are involved in life. The school makes provision for the learning of such skills by the pupils. Skills involve some kind of performance. An athlete performs a feat, a typist types on the machine, a cartographer draws a map. The performance is observable. Performance in skills are characterised by efficiency and ease. A person who has learned a skill performs the act with greater ease and more efficiency. A good typist (one who has acquired the skill of typing) types with comparatively less effort, in less time, and more accurately.

Skills are both physical and non-physical. More skills are involved in our behaviour than we are aware of. Examples of physical skills are the athletic activities, typewriting, crafts work, map drawing. Non-physical skills are like reading, dramatics, group discussions. There are a number of human relations skills which are involved in most of our interpersonal relations.

All skills involve similar processes of learning. These will be discussed later. Suffice to mention here that the important principles involved in the learning of skills are : demonstration,

experimentation, feedback and practice. Demonstration helps the learning of a skill in the correct way. The skill has to be performed and the learner has to experiment in performing the skill. He should also know whether his performance was correct or not (feedback). And he should later practice it. No skill can be learned without necessary practice.

Functions of learning

The definition of learning suggested above contains the various functions learning serves. As Remmers suggests, learning may be said to function in three important ways : change in behaviour in the new situation, continuation of the changed behaviour and use of the changed behaviour in various other situations (5).

When a learner faces a new situation he interacts in the situation and his behaviour undergoes some change. While approaching a burning matchstick the child gets burnt and he withdraws. This kind of change in behaviour takes place in every situation involving interaction. This is one important function of learning. The learner is able to develop adaptation through this function.

This kind of change is not of much use unless this is retained by the learner. The child who gets burnt once would avoid approaching a burning matchstick in future. The continuity of the changed (acquired) behaviour is necessary. Retention of the acquired behaviour is another important function of learning. This involves selectivity, retention of some and extinction of other modes of behaviour.

The changed mode of behaviour, of the learned act, is not of much use unless it is utilised in similar situations. The child learns to avoid not only the burning stick but also all burning things. This kind of transfer of learned experience makes learning more useful for the learner. This is the third important function of learning. These will be appropriately discussed later in the chapter.

THE PROCESS OF LEARNING

Learning is a process. The process has growth. There are various aspects of the process of learning. Effectiveness of learning can be ensured by paying attention to these aspects.

Needs : Learning begins with the need of the learner. If the learner is conscious of the need, learning will be more effective. When the need of a learner is strong enough, he sets definite goal for achievement. Goal setting helps in making learning more concrete. The student who wants to score high marks in the examination is conscious of the need. He sets the goal of scoring high marks. And this makes him start on learning.

The teacher can improve learning by studying the needs of children and helping them in setting goals. When an individual himself sets, or is involved in setting goals for himself, learning is more effective.

Readiness : The next aspect of the process of learning is learning readiness. Every child is not ready to learn a particular thing. We do not begin teaching reading or writing before a particular age. The child's equipment in terms of his ability in goal setting (or, at least, in goal perception), necessary physical and mental maturity, previously learned skills etc. constitute his learning readiness. With such equipment he is able to respond in one way rather than the other.

We tend to pay much less attention to this aspect of the learning process. Many a time we are so anxious that a child should learn things that we impose learning situations without the child being ready for learning. Many parents start teaching reading and writing too early. Learning readiness is necessary for effective learning.

The child develops readiness with his general development. Physical (and certainly physiological) and mental maturation go together. A normal child develops readiness to learn, say, reading or writing at a certain age. But some kinds of defects in development, illness, physical, mental or social handicaps, and such other factors may affect readiness. The child's readiness may be ascertained before beginning the learning programmes. Children differ in readiness from one another.

Readiness can be assessed in a variety of ways. The different elements in a child's equipment require different ways of assessment. Readiness for different subjects is assessed differently. Much work has recently been done on reading readiness, to find out when the child is ready to start learning reading. A very good treatment of learning readiness and its assessment can be found in Cronbach (1).

Situation : It must be clear by now that learning situation is an important aspect in the process of learning. The learning situation provides opportunity for learning. The kind of situation available to the learner contributes to the quality and speed of learning. The main task of the teacher is to organise good learning situations for the child.

Learning situations are found in the environment of the child. The home environment, the school environment and the environment of the club etc. provide such situations. It is through improvement of environment that learning can be improved. Special learning situations are also provided by the teacher.

Interaction : The child, with his needs and the goal he sets for himself, learns by interacting in the learning situation. Interaction is the process of responding to a situation and getting feedback from it—satisfaction or thwarting of the needs. Learning results from

such interactions. And the more numerous and the more satisfying the interactions are, the better the learning will be. Interaction can be in the form of observable physical movements, or emotional reactions, or verbal reactions.

CONDITIONS OF LEARNING

Learning is an active process in which the learner interacts in a given situation. Learnings vary in their effectiveness. Learning can be made effective by observing some conditions. The following conditions have been found to be important in ensuring good learning. This is especially true in the learning of skills—both physical or motor, and non-physical skills.

Motivation: It has already been mentioned that needs are the necessary pre-condition for learning. Learning can be ensured through increased motivation which may develop needs or make them focussed. Motivation has been discussed in detail in a separate chapter in the book. The teacher will do better to take steps to increase motivation. This would generate in the student a strong and continuous desire to learn from the situation.

Psychological safety: Learning is a process of interaction in which the learner actively participates in the learning situation. The learner would not participate freely unless he feels safe. In an atmosphere of threat a learner is not able to participate actively and freely.

The attitude of the teacher has a significant part to play in creating psychological safety. An authoritarian teacher, who is strict with his pupils, does not usually inspire confidence in them. A more permissive teacher, helping students participate freely, provides the kind of psychological safety necessary for effective learning.

The group of which the learner is a member is another source of threat or safety. If the group tolerates frank observations, bold ventures and encourages free discussion, the members feel safe in trying out new ways. This helps in better learning. The teacher can do much to improve classroom climate conducive to good learning.

Experimentation: Since learning is an active process, no learning is effective unless the learner exposes himself to the learning situation. The learner tries out new ways and sees whether these work well. This helps in learning. Mere passive learning is not effective. A student learning sums in mathematics learns better by trying out the sums himself.

Feedback: The student who knows the result of his learning soon after he has learned something tends to learn more than a student who is uncertain about it. After learning some lines of a poem, a student wants his friend to listen to his recitation to find

out whether he has learnt the lines well. After solving a problem he wants to know whether his solution is correct. This is called feedback. Feedback is the evaluative information about the act of learning.

The principle of feedback has been utilised in the development of 'teaching machines'. These are mechanical devices to help learning. The student reads in the teaching machine a problem and indicates the solution, he thinks, is correct by pushing a particular button. The machine operates and tells the student whether his answer is correct or not. He may also be told (he reads all this in the machine) why his answer is not correct. This is immediate feedback to the student. The teaching machine has an additional advantage in that it provides no threat and the child feels safe in trying out solutions.

The skill of giving and receiving feedback has to be learnt. Another chapter in the book deals with this aspect.

Practice : A important condition in learning is practice. This is particularly true of skill learning. No amount of theoretical reading can make a person a good swimmer, or a good typist or a good tennis player. Practice, or what is usually called drill work, is a necessary condition of learning. Since most of our learnings involve skill, this condition is applicable almost to all learning situations.

Practice is equally important in the learning of subjects like psychology. As we shall see presently learning can be internalised only through practice.

The teacher has to plan the learning situations in such a way that practice is built in them. Practice should be woven with conceptual learning. This makes learning more effective and also more meaningful.

HOW WE LEARN

Various explanations are offered regarding how learning takes place. Each theory emphasises one aspect of the process, and is therefore, helpful in explaining learning partly. We shall briefly examine some of the important theories.

(a) *Connectionism* :

Learning can be explained in terms of connections occurring in different situations or stimuli. The theories giving importance to association as the basis of learning believe that a bond is established between two or more experiences, so that the second experience tends to revive the first one. We may consider two points-of-view in this regard.

Trial-and-error learning^a : Thorndike, at the turn of the century, postulated his theory based on his work with cats. A

hungry cat would be put in a puzzle box. A fish would be placed outside the box, and the smell of the fish would be a strong motive for the cat to try to go out of the box, which he could do only by pushing a latch. In such a situation the cat would make all kinds of movements—jumping, biting at the bars, scratching at the door, pushing at various parts and so on. All such movements may be of no avail to him. The cat is not able to get out of the box. He may, by chance, paw at the latch; and he is out. When again put in the puzzle box, he takes less time to make this movement. In due course, he makes this movement as soon as he is put in the box. The cat has *learned* to paw the latch.

How can we explain this learning? Thorndike would explain it as resulting from movements made at random, movements which are tried as possible ways of getting out of the box, but which are *wrong* movements for this purpose. Such “trial-and-error” movements also include one movement which is a successful movement. Each movement involves some kind of *connection*. When there is no desired effect, the connection is weakened. However, the connection of the movement which is able to bring forth the desired response is strengthened. It is strengthened because it brings about the desired *effect*. And this is learning—strengthening of the connection of the response or set of responses leading to desired effect, out of a number of responses made as trials. This is a simplified version of Thorndike’s theory. This theory can be applied to explain human learning also. This theory enunciated the principle of trial and error and the law of effect was used to explain learning.

Thorndike’s theory explains some acts of learning quite well. Learning in children, in the later stages of the process, is explained well by this theory. When a child starts speaking, he utters a variety of sounds, some of which are dropped because their connections do not produce effect. But the theory does not explain adequately which particular sound is then chosen for association. It is not able to predict the new response which will become associated next. This inadequacy of the theory is made up by the next theory.

Learning by conditioning: Pavlov’s theory of conditioned reflex is well known to the students of psychology. Pavlov’s experiments with dogs led to the discovery of a new principle which revolutionized thinking in social sciences. It will be recalled that Pavlov’s dog *learned* to salivate at the sound of the bell, as the sound of the bell was presented simultaneously with (or, strictly speaking immediately after) the natural stimulus, viz., meat powder, and the artificial stimulus, viz., sound of the bell. This resulted in a new pattern of response at the hearing of the bell. In short, a situation can be substituted by another situation in eliciting a response. This theory utilises the principle of substitution in explaining the process of learning.

Conditioned response theory explains learning in children very well. Children learn to fear because of conditioning. In a child's experience a toy dog becomes a substitute for loud noise, if both occur simultaneously, and the toy becomes a source of fear for him afterwards. Similarly in learning to speak a language the child learns to use those sounds which are associated with smiles, gestures of approval and appreciation.

(b) *Reinforcement theories*

The theories outlined above lay stress on association formed on the basis of temporal contiguity. While this may be an important condition of learning, occurring of two events simultaneously does not always result in learning. Learning is selective. How is one response selected rather than the other? The responses which are reinforced get selected, i.e. these responses are picked up by the organism which are rewarded. Emphasis is given on this aspect by Hull and Skinner and their theories are, therefore, called reinforcement theories.

Hull's theory: Hull formulated a number of postulates (or laws) which explained the intervening variables essential for learning. According to Hull, learning results from temporal contiguity and reinforcement. Reinforcement is the rewarding state which produces need-reduction or drive-reduction. Reinforcements are of two types—primary and secondary. Primary reinforcements reduce the basic physiological needs like hunger, and thirst. Secondary reinforcements acquire reinforcement effects through their long association with primary ones. Hull's fourth postulate is important in explaining learning. He developed the concept of habit strength. The fourth postulate defines the upper limit of the habit strength in terms of relationship between three variables: the magnitude of need reduction, the time interval between response and reinforcement, and the time interval between the conditioned stimulus and the response. Hull also suggested inhibitory variables which affect the habit strength. Hull propounded a very rigorous theory of learning.

Hull's theory was not tested much with human learning. The central position given to reinforcement, of course, has implications for the classroom teaching. In the earlier stages, primary reinforcements are more important which can gradually be replaced by secondary reinforcements.

Skinner's theory: Skinner has not formulated many postulates like Hull. His main researches were done with rats. Skinner would not bother why a particular response is given. He holds that any response which leads to reinforcement will be strengthened. This concept differs from the usual S-R (stimulus-response) concept. It is not this bond which is strengthened. According to him each reinforcement builds up a reserve of responses.

(c) *Wholistic theories*

In contrast to the theories emphasising establishment of associations, some theories explain learning as a unique phenomenon occurring in a bigger context. These theories are naturally influenced by the Gestalt school.

Gestalt theory : In the beginning of the present century a group of German psychologists conducted experiments which gave rise to the Gestalt school of psychology. So far as learning is concerned, the Gestalt point of view emphasises the close relationship of learning and perception. The learning phenomenon can be understood only in terms of organisation. Wolfgang Kohler did interesting experiments with chimpanzees. The chimpanzee learning was called learning by insight. After a chimpanzee had seen a hanging banana and a box, the perceptual organisation underwent a sudden change, resulting in the development of insight in the chimpanzee who drew the box under the fruit and was able to get it. This could be repeated later. The perceptual organization explains learning. While an organism is having experience, the traces are retained, and get organized into wholes, or into gestalts. Learning takes place when the relationships get reorganized into new patterns or new and better gestalts. According to the Gestalt school, learning cannot be explained by simple S-R bonds, it is the organizational pattern which is important.

This theory has much to offer to education. The teacher strives to develop significant relational patterns. This can be done through proper planning of lessons, providing significant experiences to the child and integrating theory and practice.

Lewin's field theory : Kurt Lewin was greatly influenced by the Gestalt psychologists. He developed what became known as the field theory or the topological theory. According to him a learner has field of forces around him. This he called *life space*. The life space consists of forces in the outer environment of the learner as well as forces in the internal environment. Behaviour is the result of the interplay of forces. Learning occurs with changes in the cognitive structure, i.e. with development in the life space. The development of the life space occurs as a result of interaction between the outer environmental forces and internal forces or motivation. Lewin paid greater attention to motivation. Motives are related to specific goals which determine the satisfaction of the motives.

Lewin's theory is useful in suggesting the importance of the field forces and of motivation. Lewin was able to draw attention to the importance of goals. Educational programmes can be made more effective by paying more attention to motives.

Tolman's theory : Edward Tolman borrowed a good deal from the field theory. Tolman believes that behaviour is purposive in terms of being directed to the achievement of goals. The learner, whether an animal or a human being, through his experiences

recognises certain cues or signs and their relationship with goals. Learning consists in the recognition of signs and their meaning in relation to goals. In short, learning consists in the formation of cognitions. Tolman's theory is known as sign-gestalt-expectancy theory, as the theory propounds that the learner forms gestalts of relationships between cues and goals and his behaviour is determined by the expectation of how to attain the goal.

Tolman's theory emphasises the role of the goal objects. This is important for education. The development of proper field expectations may help in improving learning situations in a school.

The above accounts of the theories are sketchy and oversimplified. The student may refer to the original sources or to a standard text on theories of learning. The various theories have many things in common and many things unique. All the theories seem to imply the importance of goals, of motivation, selection of alternate responses, reinforcement of the selected responses and gradual improvement in responses. These have important implications for education. These are being discussed in other sections of the chapter.

THE RATE OF LEARNING

The teacher is anxious that the pupils should learn as fast as possible. However, the teacher, not familiar with the nature of the rate of learning, may be frustrated to find that the pupils are not learning a task as fast after some time as before. The teacher is concerned with various questions: How fast do pupils learn different tasks? Will practice continuously improve skill? When are the pupils likely to slow down? What can be done to accelerate learning during that period? On what factors does the rate of learning depend? Such questions are important for the teacher to consider. The nature of the growth of learning can be understood by studying learning curves.

Learning curves

The rate of the growth of learning can be quantitatively measured by plotting it on a curve. If we plot the period spent in learning on the number of trials for learning on the baseline or the 'X' axis and the increase in skill (in terms of more words learnt or gain in scores or decrease in errors or in time) on the perpendicular or the 'y' axis, we will be able to plot a graph. This will represent the rate of learning.

Learning curves for various tasks have been plotted. In some cases we find that the increase in learning is small in the beginning but the rate increases with the progress of learning. This is called *positive acceleration* and the curve is called *positively accelerated curve*. In such a curve an increasing rate is shown throughout.

Positively accelerated curves are obtained when learning of simple things are involved. If we have to memorize short series of numbers, it may take us some trials to do so. With each trial we memorize more words. After some time there is nothing left to memorize. A curve plotted for such a task will be positively accelerated. Such curves are also obtained in the learning of general principles involved in groups of problems and simple motor learning. If previous learning interferes with the present learning, we may get positively accelerated curve.

If the gains in the beginning are relatively more and decrease as learning progresses, we get a negatively accelerated curve. *Negative acceleration* is characterized by initial increase in gains followed by decrease with practice.

Negatively accelerated curves may be obtained for tasks which are very difficult. If the material becomes increasingly difficult, or if the student has learned easier material first, we may get negative acceleration. Negative acceleration may also be found in tasks which are not able to sustain the motivation of a student. Curves of tasks resembling tasks already learned are also negatively accelerated. However, if the task learned is of uniform difficulty in its various parts, if it is complex enough to engage the student for some time, and if careful records are made from the beginning, we may get, a typical learning curve which is more or less an S-shaped curve. A theoretical learning curve shows a slow start followed by increase in learning, then decrease followed by a period of almost no learning, and then slight increase ending in a period of complete learning, or reaching of the limit. Figure 1 represents such a theoretical curve. The different stages in the learning curve are shown in black and white lines.



Fig. 1.

Initial lag : As may be seen from the curve, learning begins with a period of no gains in the beginning. This period is a kind of a warming up period for the learner. The learner gets oriented to the task. However, this period is not passive. Learning does take place during this period, but it is not visible. This period also shows the importance of paying attention to motivation and initial orientation. Attention to such factors is good investment in terms of better learning later.

Increasing gains : The period of initial lag is followed by a period of increased gains. There is a sudden growth in the rate of learning. This shows that the learner has acquired clarity of purpose. This is also due to gain in motivation. This period shows the cumulative effect of learning during the period of initial lag. The learner gets new insight as a result of his orientation to the task and has strong motivation to gain in learning.

Decreasing gains : The period of increasing gains is followed by decrease in the rate of learning. The rate of learning is slowed down. This is due to many factors. The learner has gained so far and has to spend some energy and time in maintaining these gains. The learner may also have a sense of satisfaction of achievement during the earlier period. This may also slow down the rate. Moreover, the learner has to organise and integrate what he has learned so far. He has learned at a fairly rapid rate. And he has to consolidate and integrate all his learnings.

Plateau : This period is the most critical period in learning. Plateau is a period of little or no gain in learning. During this period the learner feels, and the observer also has a feeling, that no progress is made with practice. This is like a flat portion on a hill where one walks but does not climb. The period of plateau is the usual feature of a learning curve. But it can be decreased and in some cases can be avoided. Since this is a critical period, both the teacher and the learner may get impatient. In many cases a person gives up learning a task at the plateau stage.

Several factors may cause the plateau stage. The plateau may show that the pupil is having some difficulty in learning. If a task is complex and if the student has concentrated on one part only, plateau stage may indicate that the student is taking time of initial lag to start again. This may indicate divided attention in the learner. Plateau may also be caused by temporary loss of motivation or loss of interest. Plateau sometimes shows lack of maturity of the learner. It may also show that the teacher is not following good and efficient methods. In many cases plateau is due to fatigue or a sense of boredom. The learner gets fatigued or bored of the task and shows this by a period of lack of progress.

The teacher should find out when the period of plateau is reached. He can then take steps to reduce this period, or even to eliminate it, by finding out the possible causes and remedying them. Some of the measures useful in this regard are : improving the method of teaching, increasing motivation, helping the learner get over difficulty, changing patterns of practice on the task and so forth.

End spurt : After a period of no apparent gain, there is an increase in learning. The gain at the plateau period may be more hidden which is shown in the period following the plateau. This may continue for sometime, probably till the end of the learning period. This shows that the learning continues, although at a slower rate. The limits to learning are being reached.

Cessation of learning : There is no cessation of learning truly speaking. A particular task may be learned, so that further learning may be of little avail. This is true in case of many physical skills. The limit of the learning may be reached. This is shown by no gains with further practice. Theoretically this is the limit of learning.

The theoretical learning curves with the above stages may not be found in all tasks. The actual curves may deviate from this kind of curve. However, all these stages are observable in the various curves. The teacher can do a great deal in improving the various stages of learning by paying attention to some factors of importance at these stages.

LEARNING FOR PERMANENCE

We want learning to be lasting. Learning can be useful only when it is more or less permanent. We cannot, of course, expect learning to be completely permanent. Something of what we have learned will be forgotten. But we can achieve permanence in some degree. We want the students to be able to use their learning a long time after they acquired the learning. One of the criteria of the effectiveness of learning is its relative permanence.

After learning has ceased the process of forgetting begins. In some situations after learning has ceased, most of it is soon forgotten. In other cases the rate of forgetting is slower. After some time what we are able to retain remains with us. Forgetting and retention are the two aspects of the same phenomenon. Retention is the persistence of a learning after a learning has ceased, and is shown in its recall in a situation similar to the one in which it had occurred.

Forgetting increases with lapse of time, or, in other words, retention diminishes with time. We can plot the rate of retention or the rate of forgetting on a graph paper, and we shall get what we call the retention curve or the curve of forgetting. The shape of the curve will depend on many factors, which we shall presently discuss. A

typical curve of retention is a reverse curve of learning, with slight charges. A curve of forgetting is given in the figure below. As will be seen in the figure there is rapid forgetting in the beginning and retention stabilises after that. The curve would have, of course, slightly modified shapes in different situations.

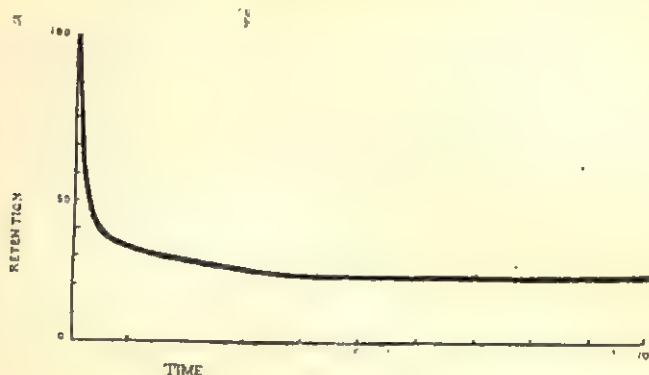


Fig. 2.

Methods of measuring retention

Retention is of main importance in memory. The phenomenon of memory used to be discussed by older textbooks in its four aspects: learning, retention, recall and recognition. In fact, retention takes the form of memory. Recall and recognition are the functions of retention. We know of retention through recall and recognition. We know of it through recall of materials learned—names, number, facts, words etc. There are various ways of measuring retention.

Method of recall : The simple way of measuring retention is to ask the learner to recall what he has learned. The ratio of the items recalled to the total number of items learned would give us an index of retention. If, for example, a student is able to recall 10 out of 20 nonsense syllables learned, he has retained 50% of the learning. But this is too simple a method and does not take into account retention that may not be revealed by recall.

Method of relearning : Ebbinghaus used this method in his classical experiments in memory. If we find that a student has forgotten all the twenty nonsense syllables he had originally learned, we may ask him now to relearn the material. The time saved in relearning gives us an index of retention. If he took 30 minutes to relearn, as compared with 40 minutes of original learning, the student has saved 10 minutes, or 25 per cent of the time originally spent. This is an index of retention. Since the method makes use of saving of time or trials as the index of retention, this is also called the saving method.

The saving method has some limitations. It does not work well in situations where much time elapses after learning. A modification has been suggested to compare time or trials needed in relearning the material with time or trials taken in learning new comparable material.

Method of reconstruction : Instead of requiring a student to recall the whole material, if we require him to arrange the material in proper order, we use the method of reconstruction. We may give the list of nonsense syllables originally learned in a jumbled order and ask the student to arrange it in the order he learnt. This method is, however, better with meaningful material.

Method of recognition : This method uses recognition as the index of retention. If, to take the example of nonsense syllables, a student is able to recognize 8 out of 10 syllables he had originally learned his retention can be said to be 80%.

WHY WE FORGET

In all learning situations permanence of learning is one of the goals. However, we do not achieve this goal fully. Researches in memory have paid attention to the problem of forgetting. Many factors affect retention. The following are some of these factors. Other factors are considered in the next section.

Elapsed time

We have seen in connection with the retention curve that with time retention goes on diminishing. It is necessary to review in order to remove the effect of this factor.

Reorganisation

Retention and recall are not passive processes. Organisation of experiences and responses is important in memory. We do not just recall what we learned sometime back. We organise the past responses in a new way—and this explains some of the forgetting that takes place. When we recall and reproduce figures seen sometime back, we do not just “forget” one figure, but we reproduce that figure in a new way—we reorganise our responses in a new pattern. In all situations of recall we organise, or rather reorganise, our responses. The extent to which the reorganisation is different from the original pattern will determine the extent of retention or forgetting.

Interference

One of the most frequent causes of forgetting is interference of one kind of material by another material. When a student finds it difficult to retain a foreign language, he may discover that this is

should be used, locating more difficult portions of the material and learning them first, and then treating the whole material as a unit.

Spaced vs unspaced learning: Material can be learned either at a stretch or by spreading learning over several trials. A poem can be learned either in one sitting in 2 hours, or by spreading the two-hour learning over 5 days. The latter method of learning has been found to be more helpful. This provides more time for consolidation of learning and saves learning from retroactive and proactive inhibition by providing opportunities for review.

Use of artificial memory aids

In many cases artificial memory aids have been found to be of much help in memorization of material. Various techniques are used to associate material learned with significant material or cues. Graphic and pictorial aids have been found to be quite useful.

Several suggestions have been made to increase effectiveness of general study in students. A five step method (called Survey Q 3-R method) of survey, questions, read, recite and review, has been mentioned by Remmers (5). A good treatment of the subject can be found in Garret's book (2).

LEARNING FOR USE

Learning is effective when it can also be used in situations of different nature from the one in which it occurred. Schools organise learning situations for students in the hope that they will be able to use their learnings later in their life. We teach in the hope that this will be applied in many more situations. This is the problem of transfer of learning. Transfer can be defined as the use of a learning in a situation different from the one in which it occurred.

The problem of transfer of learning is not a new one. In the past educators believed in the transfer of learning. This is why various subjects were kept in the curriculum. However, the problem was considered very simple. It was assumed that each subject developed some faculty which was directly applicable in the life situations. Mathematics was taught to teach reasoning. It was assumed that a person who has learned mathematics is able to reason well in all other situations. But the problem is not so simple as this.

Transfer of learning is viewed in a different way now. Various researches have shown that learnings are transferred. But the transfer is not simple and direct. One learning-increases readiness of a learner for learnings in the related field. This is one kind of transfer. Transfer, from this point of view, is a problem of readiness.

Transfer basically is a function of perception. Transfer takes place when the learner views a situation similar to the one he has already encountered in the past learning. If the learner perceives the

situation as similar, he is able to use the past learning, and transfer can occur.

As Cronbach (1) has pointed out, in any situation we learn some of the following things—specific facts, specific actions, general concepts and principles, general effective techniques, attitudes towards various aspects, self concepts. Many of these can be made for the individual by developing systems of learning. When present learnings are related with past ones, many of the things learned in the past are transferred to the present.

Transfer can be ensured by making learning more meaningful. A learning situation should not be treated in isolation. After learning has taken place, the learner should be helped to see the underlying principle, because it is such a principle as relates many learnings together. The principle should be related to past situations and many other possible situations. If the learner is able to see how the principle applies to new situations, transfer of learning occurs effectively.

All the various kinds of learning involve some skills. It is in the learning of skills that transfer can occur effectively. The basic physical skills—skills to manipulate things, finger skills, skill to handle tools etc. are applicable in innumerable tasks. When learning of a specific task develops specific skills, it is helping in the transfer of learning. The same is true of non-physical skills. While learning school subjects, children should develop basic skills of working together, of giving and receiving help, of feedback, of discussing a point, of consulting teachers and books and various other skills. These are general basic skills. Specific skills in subject matters are of equal significance. If a student is able to learn such skills, the problem of transfer becomes easy. The skills are applicable in all kinds of similar situations.

Equally important is the learning of attitudes. Attitudes prepare the general background of an individual. If learning in school pays adequate attention to the development of attitudes, transfer of learning will be ensured. Attitudes help in integrating learning and in the transfer of learning from one situation to another.

These remarks on transfer of learning have much implication for both the school curriculum and methods of teaching. The curriculum should give due place to the learning of skills and attitudes, in addition to general principles and specific facts. Basic skills are important and should be duly included in the curriculum.

Methods of teaching have much to do with transfer. If the student is helped to develop skills and attitudes by using effective methods of teaching, transfer will be easy. Methods of teaching can also help the students to discover principles and apply them in a variety of situations.

LEARNING FOR CREATIVITY

A more specific aspect of the transfer of learning is its use in developing creativity. We do not teach merely for mechanical reproduction, nor for transfer of principles and skills. We teach students in the hope that they may be creative. But we do little to achieve that. More recently increased attention is being paid to this aspect.

One important aspect of learning is its internalisation which is sadly neglected. We seldom stress this aspect. Most of our learnings are at the verbal level. We study psychology in the training institutions, but seldom pause to think how much of it we have been able to internalise. Creativity cannot be achieved without internalisation of learning. Learning can be internalised only when it is seen as significant and the basic skills and attitudes are learned. Practice is a necessary part of internalisation.

Creative learning is based on discovery. Rather than learning and memorizing facts and principles, the child should be helped to discover principles and concepts. This would help learning for creativity. This can be done fascinatingly in mathematics, social studies and sciences. Many interesting methods and games have been worked out in the past few years to promote discovery and creativity in learning rather than mere mechanical learning.

Learning is the pivotal problem in education. The success of educational programmes depends on how learning is made effective, more permanent, widely useful and creative.

BOOKS FOR FURTHER STUDY

1. Cronbach, Lee J., *Educational Psychology*, New York : Harcourt Brace, 1954.
2. Garrett, Henry, *General Psychology*, New York : American Book Co., 1955.
3. McDonald, F.J., *Educational Psychology*, San Francisco : Wadsworth Publishing Co., 1959.
4. Pressey, S.L., Robinson, F.P. & Horrocks, J. E., *Psychology in Education*, New York : Harper & Bros., 1959.
5. Remmers, H.H., Ryden, E.R., & Morgan, C.L., *Introduction to Educational Psychology*, New York : Harper & Bros., 1954.
6. Stephens, J.M., *Educational Psychology : The Study of Educational Growth*, New York : Henry Holt & Co., 1951.

MOTIVATION, EMOTION AND LEARNING

6

Motivation : Their Importance

Parents usually find difficulty in persuading their children to do their home-work in time. Such is the case with Asoka, a little boy of seven. He forgets his food while playing. His mother sometimes gives him a spanking but he appears reluctant to sit at his lessons. His mother, therefore, was surprised one evening, seeing him busy with his lessons immediately after his return from school. She asked Asoka to go and play. 'No mummy', prompt came the reply, 'I shall do my lessons ; Madam gave me 'very good' today and I will get another 'good' tomorrow. He gladly showed his work to his mother. Something happened in the situation which converted Asoka from a reluctant to a willing scholar. That was the satisfaction from success, pleasure from praise of his work and prospects of future success, praise and satisfaction. The teacher's little praise proved dynamic inasmuch as it energised the boy to work. In other words, the boy was motivated.

Human behaviour is hardly possible without motivation which is a most important factor in learning. A pre-condition of all good learning is an urge from within and a clear picture of the goal outside.¹

Motivation in education means inculcating and stimulating interest in studies and other such activities, in pupils. It involves the understanding and use of natural urges of the child and also assisting him in acquiring new desirable motives.

Motives, Their meaning and Classification : Motives are variously described. They are called urges, drives, will, determination, incentives and the like. There is an urge from within the thirsty man to take water. This is a sort of subjective or internalised or natural motive. Such motives are mostly biophysical based on the urge for self-preservation and growth. The child is born with certain needs and wants, mostly for its growth and preservation. These needs undergo constant modification because of the impact of social

1. "Learning takes place when there is : (a) need, drive, or motive, and (b) an appropriate goal, the attainment of which would satisfy the motive" *Forty Ninth Year book*. National Society for the Study of Education. Part I Chicago : University of Chicago Press. 1950, P. 34.

conditions and natural environment on them. One natural need may be superseded by another of greater importance to the organism. Thus the thirsty child may cease crying for water on perceiving a dangerous snake. Yerefeyev's experiments provide evidence that natural responses are inhibited by other overpowering motives or urges. The experimental dog instead of preparing to escape an electric shock began to welcome it by salivation.^{2,3.}

Meaning of Motivation : Anything which moves an individual to action may be described as a motive. From the point of view of education teachers have to provide for and inculcate such motives as would channelise the pupils activities in desirable lines. A boy who burns midnight oil, refuses food and sleep, just before his examination is extremely motivated by the desire to pass the examination. Teachers who direct pupils to cram their lessons are also motivated by the desire to see their pupils pass the examination. The motive to pass or to help pass the examination is again linked up with satisfaction and frustration or pleasure and pain. A pupil, who passes, feels satisfied, gets pleasure and is socially accepted. He may be rewarded by his family and school. He may get a job and so on. Similarly a teacher, who shows a high pass percentage, may get some reward and be counted as a good and successful teacher. On the other hand, failure will bring disappointment and frustration in its wake. Even parents may tend to reject a child who fails. A college student who fails may be debarred from some kinds of jobs. The desire to pass is such a *dominating motive* that other important but less dominating urges like those of rest and recreation are *inhibited*. The pupil's personality brings forth all its energy and *reinforces* the desire to pass. Whether this desire and the activities, released by this overpowering desire or motive, are socially and educationally desirable is another question. This will be discussed in a later section.

'Natural' and Acquired Motives : There are some motives which are universal among human beings. We experience such motives and drives everyday. These, therefore, may be described as "natural". Natural motives mostly consist of simple, elementary drives, but on them are based the more complex and educationally important motives. We shall describe them briefly.

(a) *Natural Motives* : They may be divided into three categories.

(i) *Elementary needs* : Every human being brings with him a stock

2. G. Bokn reports a story about Sherrington, the famous physiologist, who was present when this experiment was demonstrated, remarking "Now I understand the joy with which the Christian martyrs went to the stakes" Frolov's *Pavlov and his school* Ch. IV.

3. In our country we are familiar with the story of Kudi Ram Bose who increased his weight before he went to gallows, to which he was sentenced by the British Govt. for his patriotic deeds.

of equipment. Thus, there are motives due to basic needs such as blood circulation, heart beat, respiration, metabolism, catabolism, elimination of waste, appetites, reflexes of various types and the like. These needs require outlets for smooth functioning. These relate to the physical condition of the child and obviously affect all his activities including learning. They in turn, as pointed out above, are affected and modified by social conditions. For example, modes and manners of eating, breathing, elimination etc. constitute social manners.

(ii) *Social and emotional needs*: The child's emotions, sentiments, abilities, and such other personal needs also want satisfaction. A person desires affection, happiness, prestige and comforts. These are important needs which greatly modify behaviour and are of considerable importance in education.

(iii) *Drives of avoiding pain*. Human organism tends to avoid unpleasant sensory experiences, bodily pains, fatigue, exhaustion, continuation of unpleasant and uninteresting tasks, disappointment and experiences of failures etc. These are also important in the modification of the child's behaviour.

(b) *Acquired Motives*: Human beings are capable of acquiring new motives. As a matter of fact it is the quality of new motives which gives lustre and quality to his actions. There is a difference between a person helping his fellow being with a selfish expectation of getting some monetary gain and helping him considering it his duty as a fellow man. The action in both the cases is the same but motives are different. In the latter case the man is motivated by a duty, hence his action becomes worthy of commendation. Then there may be a person who may not be moved at all at seeing another man in distress. He may just be static. The problem of creation of motivation is, therefore, two fold: (i) creation of motives or urges and stimulation of actions (ii) creation of desirable motives. Education is concerned with all types of motives but particularly with assisting the individual to acquire desirable motives.

How are motives acquired? Motives are acquired in the same way as new reflexes are acquired. The interaction of an individual with his environment provides a constant source of modification of his old motives and acquisition of new ones. The family, the school, the street, the radio, the press, the cinema, and such other media continually work on the child. He acquires new knowledge, fresh ideas, new attitudes, new interests. These in turn become new springs of his actions.

Motives in Learning: It is therefore a truism to say that learning is motivating the child to do. By providing suitable and adequate environmental conditions at home and school the child can be motivated to do his best. It is a common experience

of the workers in the field of education, that pupils, from the lowest to the highest stage, are hardly motivated for real learning. Wastage and failures at all stages⁴ are alarming. And those who manage to pass examinations are also motivated not to learn, but to pass the examinations. An example was given above regarding the examinations serving as motivation for pupils and teachers. Examinations, no doubt, energize pupils but they misdirect their energies. They put breaks on the proper development of talents, and hamper desirable modification of behaviour. This inevitably reduces learning. Efforts therefore are needed to provide real lasting motives for learning in our schools⁵.

Activities and Techniques : Provision of motives in school would depend upon a number of factors, notably conditions which exist in society outside the schools. But there are certain educational measures and techniques which may prove very useful in creating motivation and conditions for good learning. These may be listed as : (i) maturation of children (ii) effective repetition (iii) rewards and punishments (iv) co-curricular activities for creating interests and developing abilities (v) active participation and involvement (vi) emulation (vii) realistic learning (viii) collective work (ix) information regarding progress (x) evaluation and feedback (xi) knowledge of results (xii) better teacher-pupil relationship. We shall discuss them one by one.

Motivation and Maturation : It is not wise to stimulate a child for activities before he is physically, socially and mentally mature for them. The "Government-Service minded" among us expect, children of 5 years to read in standard III and that too with good results. A little deviation of their child from the standard, they have in mind, becomes a problem for them. Such attempts and attitudes are very pernicious to the child's growth and should be avoided. The normal child is capable of taking care of himself in many respects. To provide challenges beyond his maturation may bring frustration and feelings of failure which in turn may inhibit his mental growth and reduce his rate of learning.⁶ On the contrary, a properly planned curriculum and teaching in accordance

4. It was estimated by the Planning Commission that failures amount to about 50% at the secondary stage. Planning Commission, Govt. of India, *The Second Five Year Plan 1956*.

5. Efforts are being made by the Ministry of Education and State Education Departments in this regard. Thus e.g. diversification of courses, provision for Educational and Vocational Guidance, text book research, reforms in examinations and steps for proper evaluation. Readers would find references to these activities in this book in chapters 15 and 22.

6. Analogous to Pavlov's *Irradiation of cortical inhibition*. See Fralov cited above ch. VII. Also Pavlov. *Selected works* p. 252, 275-7 Moscow Foreign Languages Publishing House. 1955.
See also reference 11.

with age and level of mental development of children would make it more meaningful to them. Pupils get interested and therefore involved in such learning. They begin to see some purpose and goal in their work and strive to achieve them.⁷ Properly understood goals increase motivation.

Effective repetition : From times immemorial trainers and teachers have been using repetition as a method of teaching. In ancient India we had scholars who had whole books memorised. This was more so when there were no printed books. Even now we have many traditional scholars who memorise texts and commentaries in the same old way though printed books are available. We now understand that mechanical repetition does not lead to good learning or modification of behaviour along desired lines. Voluntary repetition of action is possible only when pupils get satisfaction from such actions. The hedonistic principle of pleasure leads to repetition and the seeking of satisfaction ; the *Law of effect*, therefore, comes into operation. Certain connections in the brain get strengthened because of frequent repetition of the corresponding actions. This leads to effective learning. Here also motivation plays the central role. The pupil tends to repeat his lessons and willingly work further when there are prospects of satisfaction. The future satisfaction and pleasure, therefore, work as motivation. The example, given in the beginning of the chapter, illustrates this point. Rewards and punishment thus play a very important part in school learning.

Punishment : In the past, the method of repetition to secure memorisation, was based on punishment and fear. Physical punishment was the order of the day. It is not unfrequent even today. Our teachers both in primary and secondary schools use punishment to impose their will and authority on pupils. Punishment takes various forms from humiliation to caning.

Punishment is obviously a negative motive and is based on fear of failure, fear of losing prestige, fear of insult or rejection, fear of physical pain and so on. Personality development based on fear and punishment is inimical to democratic living which we are striving to build. Extreme punishment and insulting experiences kill initiative, resourcefulness, leadership and the spirit of free thinking and adventurous living, the very qualities we should seek to cultivate in our pupils. It turns pupils into mechanical toys cramming certain facts without appreciable mental development. Even the fear of failure in an examination is a negative motivation. Pupils work, not because they want to learn, but because otherwise they may fail and be rejected. Such negative motives lead to a variety of negative and a social

7. *Forty Ninth Year book*, National Society for the Study of Education Part I, Chicago : University of Chicago press, 1950 p. 87. "Motivation can be maintained only when the goal of activity is known and progress towards it can be established meaningfully."

activities, such as cramming, copying, stealing, quarrelling, even bribery and so on. In extreme cases, punishment and cruelty meted to pupils recoil on society itself. Pupils may grow into undesirable citizens.

Severe physical punishment is simply outrageous and therefore should be entirely banned in schools. Physical punishment, even to criminals is now becoming outmoded—the tendency being to reform them. But punishment, such as a failure or a reprimand, no doubt negative in character, has certain advantages. These motivate children to work on desired lines so that they can avoid the experience of pain associated with punishment.

Rewards : The prospects of getting rewards like prizes, degrees, honours, praise serve as definite motives for work. They are positive in character inasmuch as they release talents and qualities and develop them further. In extreme cases they may also tend to become ends in themselves. A pupil may strive to get a first class or a rank at an examination? He may be interested not in learning but in the degree or marks. All of us have experience of persons with first class degree who cease to have any interest in learning, once they have passed examinations. The craze for collecting degrees is quite rampant. Some educationists, therefore, support abolition of all degrees so that those who happen to pursue higher education, would do so for better aims.⁸

The question, therefore, is not of reward and punishment, but of their use for promoting effective learning and development of human personality suitable to modern living.

Co-curricular Activities : Co-curricular activities such as sports, and clubs play an important role in motivating pupils to work. The tendency is to provide many activities in schools so that pupils may choose some activities of interest to them and participate in them. Such activities develop pupil-interests and stimulate their latent abilities. These in turn supplement learning of school subjects. They lead to voluntary activities on the part of pupils and motivate them to learn and work on their own. Pupils who are interested in history for example, may be brought together in a history club. Such boys may plan tours to nearby places of historical interest and study things on the spot. Such activities would develop their interest for history, further leading to better studies and lasting learning. Science clubs are becoming a policy in our country. Efforts are being made to develop such clubs in all schools in every district. These would motivate pupils for science learning and laboratory and experimental work and develop interest in science and the scientific talent through proper motivation.

8. Humayun Kabir Committee, appointed by Govt. of India, recently suggested measures to reduce the lure for securing degrees.

Active Participation : Pupils tend to do better work when they are active partners in an enterprise. This is true of all people and activities. School programmes which do not activate pupils become a one-way affair. The feeling of active association makes the activity more purposeful, and therefore motivating. Pupil's ego-involvement ensures release of more energy. They feel interested. They attend to their activities more vigorously and put in more concentrated effort. This is true of physical as well as intellectual activities. There is evidence to suggest that pupils' participation promotes school learning⁹.

Emulation : There is a lot of competition, now-a-days, in every field of activity, including education. Only one pupil can top an examination while many try. Pupils tend to imitate. This tendency can be utilised for healthy imitation. Examples of good pupils may motivate others to become equally good. This should be tried in all fields of school work.

Collective Work : Coupled with emulative spirit is the need for collective work. We are trying to build a society based on the spirit of collective good through collective work. The collective work is not only important in itself, but it is also an effective scientific method of learning.¹⁰ It is the duty of all teachers to inculcate the spirit of selfless work for the good of the group as a whole. Such activities in turn, if properly planned, release the noble qualities in pupils. They not only lead to socially healthy attitudes, but motivate the individual to put in his best because they do good to others and also to himself. Those teachers who organize *Shramdan* or social service activities in schools can testify to this experience.

Team work is useful. Evidence shows its usefulness in fighting shyness, aloofness, nervous tensions, etc. Through team work pupils develop abilities to organise and manage, on their own, activities such as visits, hikes, school clubs, exhibitions, school assemblies, handicrafts, festivals, even their own lessons as well as lessons for younger pupils.

Evaluation and feedback. A proper evaluation of school work can become an effective motivation for better learning. It is well known that the present system of examinations, in spite of faults,

9. *Promoting Better School Learning* by C. C. Shah, Jewanbharati, Surat 1959. It describes an experiment conducted to promote school learning. The author was personally associated with it. Efforts were made to activate pupils which led to better results in many ways.

10. cf. Makarenko, A. "Road to life", Moscow: Foreign Languages Publishing House, 1950. The author describes various methods he used to reform and educate delinquents. The most effective was the method of collective work which led to admirable results. See also Maller, J. B. "Co-operation and Competition: An experimental Study in Motivation". *Contribution to Education*. No. 384. New York: Teachers College, 1929.

directs pupils to work. A system of assessment based on basic objectives of education and teaching, and built on sound principles leads pupils to work on desired lines, thereby promoting learning. But the public examinations do not give any chance to pupils to know their weak areas. The results are not fed back to pupils and therefore their motivating value is lost. Sound internal assessment motivates school learning.

Information regarding progress given from time to time to pupils also motivates them to work. Awareness of one's progress, of both success and failure, inevitably leads pupils to work. Teachers and parents, get more chances of knowing the progress of their pupils when tests are frequent. The principle of pleasure and pain and the Law of Effect come into operation.

Teacher-Pupil Relationship : A good intimate emotional relationship between pupils and teachers motivates pupils to work. A good individual contact would depend upon the teacher-pupil ratio in the class. But it also depends upon the individual teacher's attitude towards work and pupils, how and what type of atmosphere he creates and maintains in his class, the degree of acceptance he has for his pupils and vice versa. Better acceptance leads to better understanding and therefore to better motivation.

EMOTIONS IN LEARNING

We saw above, how motivation is inseparable from good learning. The child, Asoka, was motivated to do his home assignment by his teacher's reward of 'very good'. That was a source of satisfaction and joy to the young pupil. The boy felt elated by his success and the teacher's praise. This worked as a grease in his learning process, and enabled him to move ahead more smoothly. Emotions, like motives, are inseparably interwoven in all learning.

Emotions constantly come into play in the child's relation to his fellow pupils, teachers, parents, siblings and in school and home situations. A good teacher has to be conscious of emotions of his pupils, as well as his own so that a smooth learning situation can be maintained in the class. Parents have also to be aware of this fact in order to promote healthy growth of their wards. On the other hand, pupils are to be assisted to understand and develop their emotions to enable them to lead an adjusted life, to live smoothly with other pupils and other people in the home and out side.

Cause of Emotions

Emotions are as varied and complex as life itself. It is difficult to conceive one definite single cause for an emotion. An individual's basic needs, desires and aspirations, his values of life and his life-conditions, all produce his emotions. The latter may be inhibiting

or stimulating. Some conditions may block his emotional growth, others may further it.

Emotions may be *negative* or *positive*, depending upon the conditions which arouse them. An individual may be aroused to defend himself against an attack or insult or a damage to his pride and self-esteem. Such circumstances give rise to negative emotions of fear or anxiety or complex emotions of hatred and contempt. Meeting a person whom one loves or a beautiful sight or some success leads to positive emotions of joy.

Some simple emotions are universal in nature, irrespective of age and sex. They are almost of reflex type. For instance, we experience a brief state of fright when startled by a loud noise. Some emotions appear on maturity, for example, fear of snakes. A child of two or three years may pick up a crawling snake because he lacks understanding of the object. As soon as he begins to understand he will simply run away from it out of fear. Some emotions manifest themselves at certain developmental stages, such as sex or maternal affection.

The same stimulus may arouse different emotions in different persons. This can be seen at the time of the declaration of examination results. Of two pupils, getting the same number of marks, one may be elated and the other depressed, depending upon their aspirations and expectations. This latter can be described as *individual* or *psychological* environment against the physical or the *outside* environment. It is another matter that the *psychological environment* may itself be determined, nurtured and developed by outside social and physical conditions. But the fact remains that both the outside and the inside conditions, combine to arouse certain, particularly complex, emotions.

Basis of Emotions

We shall briefly discuss here, the theory of instincts, physiological basis of emotions and Pavlov's researches in this regard. Such a discussion may prove useful in understanding emotions and their modification.

McDougall attempted to discover and explain, inherited tendencies or springs of actions. He called them instincts. He described three parts of instinctive behaviour: (i) a situation is perceived or understood, (ii) then an emotion is aroused, (iii) finally an action occurs. McDougall has listed some fourteen instincts together with four general tendencies.

There have been keen discussions on theory and nature of instincts and their relation to emotions. It is not necessary to describe them here. It is being recognised that the innate structures are important. But, of more vital importance are the social conditions including family influences and education which exercise control over them,

and condition them to changes, develop them into complex civilised behaviour.¹²

PHYSIOLOGICAL BASIS

Cannon's Experiments : A man in fear of a wild animal, takes to flight. A man, howsoever weak or hungry, will also try to do the same. Such a performance in emergencies exhibit extraordinary strength and energy. From where does this energy come ? Experimental evidence¹³ suggest that such responses are promoted by the secretion of adrenin by the adrenal gland. Adrenin reaches visceral effectors through the blood stream, causes them to react as they do to nervous impulses of the sympathetic nervous system. Cannon showed his major concern for bodily changes in emotional behaviour and emphasised the role of sympathetic system.

Role of Autonomic System in Emotion : Cannon's findings promoted many other studies leading to new developments in the physiological understanding of emotions. These point out considerable involvement of parasympathetic division of the autonomic system. Researches suggest combinations of sympathetic and parasympathetic excitation in various emotions.

Thalamic Centre and Hypothalamus in Emotions : Cannon had emphasised the role of thalamic centres in emotions. Decerebrated animals continued to bark and show emotions. Later experiments however suggest that emotional behaviour is a dynamic function of the entire organism involving the central nervous system.¹⁴ Bard found rage behaviour in decorticated animals which he thought depended on a portion of hypothalamus. But he also found this behaviour present in cats in which the entire hypothalamus was destroyed but all other parts remaining intact.¹⁵ This suggested that emotion was a function of the entire organism including the central nervous system.

12. Vernon, P. E. Some objections to the theory of human instincts. *B. J. ed. Psychol.*, 12, Part I, 1942. "I would much prefer to regard such drives as interests, attitudes, sentiments, and complexes which may differ greatly in different cultures which could easily be altered by changed methods of upbringing in early years and which are still susceptible to modification during late childhood, adolescence, and even adulthood, by skilful psychological treatment."

13. Cannon, W. B. *Bodily changes in pain, hunger and rage*. New York : Appleton Co. 1929. He has termed his theory as *Emergency theory of emotions*. A sympathetic nervous system and adrenal glands work to protect organism in emergencies. Chief bodily changes involved are (i) Liberation of blood sugar (ii) increased activity of heart (iii) rush of blood from digestive organs to skeletal muscles (iv) fatigue products carried away rapidly (v) rapid coagulation of blood due to presence of adrenin.

14. Massermann, J. H. *Behaviour and Neurosis*. Chicago University Press, 1943. "An emotion is a highly integrated conative cognitive and affective somatic reaction in which not only the central nervous system but the entire organism functions as a psychobiologic whole in its sensitive adaptations to the continually changing organismal milieu" (P. 57).

15. Bard, P. Neural mechanism in emotional and sexual behaviour. *Psychosom. Med.*, 1942, 4, P. 171.

Pavlov's Researches and Emotions: Pavlov's epoch-making researches on the higher nervous activity have considerably influenced the understanding of emotions as well as several other fields of psychological study. He regarded the organism as an integral whole because: (1) All its parts and their functions are inter-connected. It is a system which functions as a single whole, which comes into constant and continuous interaction with the external environment; (2) The functional unity, achieved mainly through the nervous system between the activity going on in the internal environment of the organism and the activity which connects the organism with its external environment; (3) The unity of the mental and somatic.¹⁶ Pavlov regarded development of speech in man of great importance. This, he called the *second signal system*. The first signal system covers external stimuli, signalling its properties to the organism. But in man, words also act as stimuli. This makes the cortical system of man, qualitatively different from other animals. The fundamental laws governing the two systems (i.e. the first and the second signal systems) are the same. But he emphasised that the first signal system in man differed from animals because of internal relation of the two systems in man.¹⁷

Pavlov's findings and the subsequent work of his co-workers is of great importance to the understanding of emotions and their modification and use in learning.

In view of such researches, it seems inadequate to continue to entertain concepts like inborn instincts or inherited tendencies. The properly planned and organised educational programmes are of vital importance. Such programmes will go a long way in achieving the desired moral and emotional development of our children.¹⁸ The emotional behaviour right from early infancy to later life appears constantly modified, directly and indirectly, through conditions of life.

Early Emotional Behaviour

The present stage of our knowledge regarding the child's early emotional behaviour remains inadequate. Some studies suggest that

16. Foreign Languages Publishing House, Moscow. *Scientific Session on the Physiological Teaching of I.P. Pavlov* 1952, P. 28-9.

17. Pavlov, I. P. *Selected works*—Moscow Foreign languages Publishing House 1955. "The chief strongest, and the most permanent impression we get from the study of higher nervous activity by our methods, is the extraordinary plasticity of this activity and its immense potentialities, nothing is immobile, intractable, everything may always be achieved changed for the better, provided only that the better conditions are created". P. 446-7.

18. Simon, Brian. *Some aspects of research in educational psychology in the U.S.S.R.* *Soviet Education Bulletin*, 1955, 2, 4-50-67. He writes "Pavlov's work on temperamental type is the basis of investigation on these lines in the Soviet Union. Soviet psychologists emphatically reject the conception of child development as largely consisting in unfolding of innate powers... In other words they reject the fatalistic conception of inborn limitations. They conceive of education as "the moving force in psychic development of the child" (P. 53).

the emotional experiences are more powerful during the earlier period than at any later stage. Other studies indicate the contrary, pointing out that the child's capacity for emotional behaviour is quite undeveloped during the earlier period.¹⁹

We observe, in infants, cries, wild movement and tantrums. Laboratory studies, and controlled observation of such expressions indicate that these are diffused, and undifferentiated rather than specific emotions of fear and rage.²⁰ There is some evidence to suggest differentiated emotions of fear, delight and affection during the first year of life.²¹

Importance of Early Experiences

Opinion regarding the importance of early emotional experiences seems to be divided. At one extreme, are persons, who consider the early experience as permanent impressions which carry their weight throughout the rest of the child's life. They believe that certain attitudes, complexes and habits are formed before a child enters a school; that nothing, or very little, can be done by way of their modification in later life. On the other hand, there is the view that every change is possible through good education and that early experiences are not of such great importance. There appears to be an element of truth in both the views. Researches²² in physiology of higher nervous activity indicate that conditioned reflexes begin to be formed very early in the infant's life. They suggest that the functional maturity of the cerebral cortex depends upon actual functioning. If proper external stimuli, during early childhood, are absent or insufficient, the organisation of the work of the cerebral cortex may be arrested or it may go astray, even when there appears no anatomical defect. This indicates the importance of proper upbringing from the early months of a child's life. From the point of view of Educational Psychology it seems very important in our country where most of the parents are illiterate and home conditions quite deficient. Researches are urgently needed to discover the impact and influence of poor home conditions and upbringing on emotional behaviour of growing children who are in schools. But there appears no ground for pessimism on account of the supposed disastrous consequences of early emotional experiences. Present emotional reactions are no doubt influenced by past reactions; but neither present nor past reactions are static or unchanging. Changes in conditions of life produce changes in emotional reactions too and past adverse experiences may

19. Landis, (15) and also (3), (4), (12), (13); Cannon's, (7), researches are considered classic in this regard. (Numbers refer to reading list appended to the chapter.)

20. Bridges K.M.B. Emotional development in early infancy. *Child Development*, 3 (1932) 324-334.

21. Buhler, C. *The First Year of Life* New York, John Day 1930.

22. Elkonin, D.B. The physiology of higher nervous activity and child psychology in Brian Simon (ed) *Psychology in the Soviet Union*, London: Routledge and Kegan Paul, 1957, Part II. 47-68.

be washed away gradually by more favourable experiences. It only means that both early experiences and later educational programmes and experiences are important for the good emotional development of the child.

Changes in Emotional Expressions with age :

Children of different age groups express same emotions differently. Thus a child of 15 normally would not show his anger by crying or tantrums as a child of 3, does. Instead, the former may show his anger by ceasing to speak with the offending fellow, or even by recourse to beating or by some other method of protest. With growing age and acquisition of verbal skills many emotional reactions tend to be hidden and become substitute expressions. for example, mannerism to irritate. The child develops capacity to tolerate delay in fulfilment of his desires and also to suffer in silence. These changes occur in outward expression but inwardly a school child continues to remain in need of sympathy, affection and attention which are openly demanded during earlier childhood.

Socialisation : Along with physical and mental development, a process of socialisation takes place. A boy who tends to weep frequently may be teased by his classfellows and friends as a 'weeping boy' or a 'girl'. Such social factors lead to concealment of emotions, particularly outside home. The positive influences of school situations, such as games, lessons, teacher's personal impact, and emulation of colleagues continuously work on a child, socialising his emotional expressions.

Concealment of emotion in certain cases may prove more painful and detrimental to a child. A child, when actually emotionally aroused, adds to his burden by attempting to conceal it. His actions may become crude and funny, inviting ridicule from others. In extreme cases it may tell on his health.

(a) *Affection :* It is probably the most important human emotion. It has a tremendous influence on the child's entire development, the growth and development of an uncivilised, helpless babe to a civilised effective human being.

The upbringing and education of a child depends largely upon the amount of affection he receives from elders as well as the amount of affection he has for others including his parents. Such affection shows in day to day activities of the child. Affection develops in a child a feeling of being wanted. He feels assured. His self-esteem grows and with it grows the urge to try out, to be adventurous, to take risks, to make mistakes and learn through such experiences. Affection enables parents to accept the child as he is in his own right. An atmosphere of genuine love helps the child also to develop love and concern for others. He tends to give to others what he himself gets. The investment of affection in a child is returned with dividends, thus, creating conditions of mutual acceptance and love.

Affection in School : Learning in school also depends to a great extent on affection. Pupils seek sympathetic and warm treatment from their teachers. One of the characteristics of a good teacher, therefore, is his human quality, that he feels genuinely concerned about the pupils under his charge. One of the worst things which can happen in a class is the feeling in pupils that their teacher has 'favourites'. This may give rise to jealousy and discord. Others may feel rejected ; this may affect their behaviour and work.

Affection for others : Affection should not be considered a one-way affair. If children form the habit of always wanting love, without their giving it to others, it would make them selfish and less human. The role of homes and the society at large is very important in this connection, besides, of course, the school. Development of affection for others gets fostered by healthy attitudes to work. The family provides many opportunities in this regard. If members of the family help each other in their work, admire each other's success, children will tend to do the same.

The development of love in children is important for the development of a new society based on cooperation and mutual love. One complex problem which the western societies, based on competition and private profits, face today is selfishness and lack of social values. This in turn hampers proper emotional development of children.²³ Self-interest makes emotional adjustment difficult, leading to mental conflicts.

Sympathy is another emotion which counts much for the emotional development of a child as well as society. It is a person's concern for others' distress and success. It is the degree to which a person is moved to feel for others when they are in need and difficulty. The growth of sympathy, like all emotions depends upon the age of children. The younger ones are more self-centred and concerned more about their own welfare. But it should grow as he matures. Sympathy may be confined, in some cases to nearer ones. But such narrow sympathies may give rise to fanaticism and groupism.

Good educational programmes including those for social education, through press, radio and other such aids should aim at fostering broader sympathies—feelings for human welfare, irrespective of language, caste or race. Parental care and home conditions here too play an important role. An emotionally maladjusted or undeveloped child may be less sympathetic than others who are better adjusted. He may tend to seek sympathy rather than show it to others.

(b) *Humour and laughter* : These differentiate human beings from animals. These are social emotions which greatly smoothen our

23. Jersild A.T. Emotional Development in *Skinner's* (ed) *Educational Psychology* London : Staples, 1956. He says, "A major contemporary problem in promoting emotional adjustment and stability is the fact that so many persons have difficulty in acquiring devotion to something that goes beyond what they regard as their own immediate self interest".

daily work. They help in overcoming conflicts and tensions. They lead to tolerance, relaxation and joy. They provide chances for self-criticism and improvement in one's behaviour. Sarcastic humour, however, does not have the above qualities. It is unsympathetic, unhealthy and painful.

(c) *Fear* : A person in fear tends to turn his back from the object of fear. He tends to avoid the situations which cause fear. It often protects a person from disaster and harm. Fears release considerable energy and a person may pull himself to prevent a frightful event from happening. Even imaginary fears, for example, fear of failing in an examination may promote activities and the person may improve his work. Fear of consequences may prevent a person from excessive adventure or a seemingly foolish thing, for example, climbing a dangerous mountain or crossing a busy road carelessly or pilfering a thing.

Ordinary experience shows that many bad things, which we fear might happen, do not actually occur. Children's fear of imaginary animals, pupil's fear of failures at examinations, a passenger's fear that he may miss the train or bus, are some examples. A study of children's as well as adult's fears may disclose many such instances. No doubt, such anticipated fears prevent trouble but many persons during their childhood as well as later life work under burden of fears which actually never take place. In some cases such anticipated fears or worries may also be symptoms of some emotional disorder.

New types of fear appear as the child matures and begins to understand things. During and after puberty many things begin to bother him which never bothered him earlier. His appearance, his relations with friends, his books, tuition fees, anticipated plans for the future and a host of such other things work on him to produce fear. Researches are lacking in our country in this as in other fields. Many things which bother American secondary school pupils may not be bothering our pupils and *vice-versa*.²⁴

Fear of war and destruction, also appear quite late in life for children are not aware of such problems. At the present moment large sections of population particularly in the west are in the grip of the fear of an anticipated war. In a sense, it may lead to vigorous attempts for securing lasting peace. On the contrary it may lead to hysterical preparations for war. Fear of war may actually lead to one.

Many factors work in a combined and cumulative way to produce fear, lack of self-confidence, lack of ability to perform a

24. 'Bonar,' S. High school pupils list their anxieties—*School Review* 50 (1942) 512-515. Among other things, dating problems worry them. This e.g., is no problem with our students.

given task, lack of self esteem, feelings of rejection or lack of affection at home, needs for self-approval and self-fulfilment²⁵ are some psychological factors which contribute to fears. Presence of such factors in children make them more susceptible to fears than others.

Fears which are unrealistic may be overcome by awareness of the unreality. But fears which stem from concrete needs disappear only when those needs are positively fulfilled in some way or other. A child who has developed certain fears because he suffers from lack of affection needs affection or acceptance. Educational programmes and other activities, therefore, should seek to provide concrete facilities and experiences so that children and others may be saved from avoidable fears.

(d) *Anger* : There are many occasions in everyday life for the arousal of anger. Interference with one's desires and wishes is one of the chief reasons of anger during infancy. As the child matures, the occasions for anger also increase. Adolescents show resistance to directions. They tend to assert their own views or actions. This happens at home, in the street and at school. Resistance and self-assertion may be a healthy desire to claim and show independence. Through resistance and show of anger against interference, children learn to deal with other people. They may become aware of mistakes and try to become more tolerant. Adults have to show tolerance to children in this respect. All individuals are not equally rational or tolerant. Some get angry when their authority is flouted. This complicates the situation and hampers children's free expression.

Causes of anger are varied and innumerable. Some of them may be rejection of a child's wish, difficult assignments beyond his ability, tiresome jobs, uninteresting lessons, interference with set habits, real or imaginary favouritism on the part of parents or teachers, attacks on self-respect ; physical illness, fatigue and hunger. It must be noted that planning of lessons should take into account children's interests, span of attention and ability levels in order to avoid resistance. Firm but impartial teachers do a better job. Discrimination is resisted most by children as well as adults.

We sometimes notice an outburst of anger which seems disproportionate to the occasion. These are in fact cases of accumulated anger. This happens with over-patient teachers and parents who suppress their anger which only bursts out on other petty occasions. Sometimes mild criticism gives rise to an outburst. This is because of certain other hidden causes which may be entirely subjective. A person may be sensitive to certain seemingly mild criticism while being tolerant in other situations.

A mother may be surprised when told by the teacher that her child behaves very well and remains quiet at school. The same

25. a Horney, K. *Neurosis and Human Growth*. New York : W. W. Norton and company, 1950. She has discussed the importance of self approval and self fulfilment in prevention of neurotic fears and neurosis.

child is very naughty at home with frequent expressions of tantrums. The child suppresses his anger at school and shows it with double vigour at home. He may be afraid of showing anger at school but feel free to do so at home.

Adults angered by their bosses may show their temper on their children or others at home. A boss angered by his wife may go off at the slightest provocation or even without any cause, in the office.

Anger, like fear, has numerous practical values. It arouses individuals to work. It improves persons to deal with difficult situations. Outbursts of anger may give clues to the inner working of a child's mind enabling teachers and parents to assist him more effectively. Anger brings members of a group or a nation nearer and unite them to face a humiliation or a national calamity. Resistance or show of anger works as an anti-dote to cruelty. It provides teachers and parents a chance to assess their own conduct.

An angry child at home or an angry pupil at school essentially has some problem. He may be working under frustration; for instance, the tests given to him may be difficult, he may not be interested or well up in a particular subject. He transfers his dislike of the subject to the teacher or the school. The understanding of angry behaviour would therefore prove useful in finding out children's real problems.

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DEVELOPMENT OF MOTOR-SKILLS & KNOWLEDGE

7

I. INTRODUCTORY

One of the impressive features of human behaviour is the ability to build new behaviour patterns. When the human being meets a situation for which he has no adequate response, either through innate equipment, or through the development of habits due to his upbringing, he mobilises his resources and varies his behaviour making a number of alternative movements out of which, by trial and error, new action patterns arise and become a part of his behaviour. This is learning. Thus in a broad way we may assert that learning involves modification of behaviour. But there is more than that. Man not only preserves his experiences but also transmits his skill and knowledge to others. Thus man learns not only from his own mistakes but also from the mistakes of others around him and the mistakes of past generations. It is because of his ability to learn quickly he can acquire many skills and much knowledge which enable him to lead an effective and fruitful life.

In a broad way we can distinguish between motor skills and symbolic skills. Motor skills are those which involve the direct movements of the body and its parts. There is considerable individual variation. Some people can acquire a new motor skill easily and well, while others can attain only a moderate degree of it. There are also variations with respect to physical strength and quickness. Symbolic skills include language and numbers and drawing. By means of these symbolic skills man is able to short-circuit the physical trial and error process and solve problems more quickly and easily. Man is not only a learning animal, he is also a speaking animal. With his spoken and written symbols he can transmit experience to others. That is why it is asserted that symbols constitute the greatest invention of man. As we know, in ancient India the vast multitude of Vedic hymns were transmitted, from generation to generation, through thousands of years, through speech. Even with respect to the acquisition of symbolic skills there are individual differences. For instance, some people can use symbols easily and fluently while others speak slowly and with hesitation. Some have great knowledge while others have very little. There are also individual differences with respect to the ability to think. Through thinking human beings can anticipate situations and prepare for further possibilities so that they can control themselves, the external world, as well as the other human beings more effectively. In this Chapter we shall try to understand how these motor skills as well as symbolic skills are acquired, and what their course of development is.

II. DEVELOPMENT OF MOTOR SKILLS

(a) *Locomotor and manipulatory skills*

In a broad way we may classify motor skills into locomotor and manipulatory skills. The locomotor skills involve such activities as walking, running, climbing. The manipulatory skills involve the handling of objects with dexterity. Motor skills are very important at all ages. Long ago ancient Indians recognised this by classifying beings in the world into two varieties, the *chara*, the moving, and the *achara*, those incapable of movement. Lack of movement circumscribes the scope of external influences. The new born child is, as it were, cribbed and confined. He extends his activities when he is capable of touching objects around him with his hands and feet. When he starts crawling, his world extends a little more. That is why in certain Indian homes when the child creeps and crosses the threshold it is celebrated as a great event in his growth. When he learns to walk, his area of activity widens still more and the parents have to be very careful about the various objects in the house which he may upset and break and thus expose himself to the danger of being hurt. But his parents know that obstructions are of no avail because the infant is so active that he seeks out new objects and new experiences. During childhood and adolescence motor skills are of very great significance for recreation. During adulthood motor skills are essential to holding a job as well as to leisure-time activities. But with aging there is a decline in motor abilities which force the individual to retire from work and limit his recreation. Thus we find that in early life there is a broadening of the horizon with the increase in motor skills and in later year activities are narrowed down by the decline of motor skills.

Skills involve movements of the body by the action of the striated musculature. Further, movements are learnt in order to attain specific goals. Skilled performance is dependent upon continuous sensory feedback. Motor skill, in other words, depends upon our perceptions, particularly through the auditory, visual, muscular, and joint senses. In the beginning we are aware of these sensations, but with increase in skill our awareness of the sensory cues become less and less. The performance becomes smoother so that it appears as if the activities are automatic. (11; 420-36).

Several motor skills are involved in the educational process. In athletics and games in arts and crafts, in speaking, reading and writing -- in all these motor skills are involved. One of the sad features of Indian education has been the neglect of motor skills in the fields of games and athletics on the one hand and those of arts and crafts on the other. Even today most teachers as well as the vast majority of parents imagine that education should concern itself only with intellectual advancement.

(b) Growth in motor abilities

As we have seen in Chapter II the human neonate exhibits three types of motor responses. (a) random generalised activities or mass responses involving the whole organism, (b) specific reactions like the sucking-reflex, grasping, babinski etc. and (c) complex behaviour patterns involving the coordination of several reflexes like the startle response.

One of the most important stages in the growth in motor abilities is the development of eye-hand coordination involved in reaching and grasping objects. By the time the infant is 7 to 8 months old he no longer depends upon random movements to grasp his rattle or other objects. McGraw (12; 127-141) has described six phases in the development of eye-hand coordination. Among them the most important are the object-vision phase, where the infant fixates on the object, the visual-motor phase, where there is an interaction of the visual and the motor activities, and the manipulative phase where the child reaches and holds the object.

Next there is the development of locomotor skills. Gutteridge (9; 244) made an extensive study of 2,000 children from 2—7 and found the norms for jumping, hopping, skipping climbing and tricycling. He found an increase in ability from year to year. He also assembled data regarding the development of such manual skills as ball-throwing, catching and bouncing, which are dependent on the co-ordination of the eyes, arms and hands. Extensive studies have also been made on the development of the eating skills, and writing skills. Goodenough (8; 431-450) studied the speed of reaction to the auditory stimulus in subjects ranging from 3.5 years to adulthood. The results revealed a marked degree of improvement with age. It was found that there was a reduction of useless movements as well as a decrease in the bodily tension with increase in age. Sloan (15; 183-252) prepared the motor development scale consisting of 36 items. The score increased from 32.53 at 6 years to 65.39 at 8 years, 89.05 at 10 years, 112.83 at 12 years and 130.81 at 14 years for boys. He found that there was hardly any difference between boys and girls. This continuous increase in motor skills with age suggests that both maturation and learning factors operate in determining the scores at different age levels.

Thus by the time the child comes to the elementary school at six years he is already in possession of many locomotor as well as manual skills. In the early school years there is an increase in smoothness and efficiency in the execution of the activities. Extraneous movements disappear and there is an increase in speed as well as coordination. Finally, the skills become automatic and the child is now able to apply them to new situations. Moore (13; 668-672) found a marked increase in the eye-hand coordination by using 96 marbles which had to be placed in holes. He found that while six-year

old children took 160 seconds, 16-year old children were able to finish it in 95 seconds. Long ago Pyle (14) tested thousands of boys and girls from 6-18 years and found that the speed of tapping increased from 115 at six to 160 at 12 and 210 at 18. Chase and Darley (5;15-23) used the Minnesota manual dexterity test and the O'Conner finger dexterity and Tweezer dexterity test. They found that the dexterity reaches the peak in the 20's and declines slowly, so that there is 10 to 20% fall by the 50's and there is a more rapid decline after 65. Thus most of the evidence indicates that there is an increase in efficiency of motor performance throughout childhood, adolescence and early childhood and a differential decline thereafter.

(c) *Three basic factors in motor skills*

Many motor and mechanical skills are dependent on three basic factors which change with age, viz. speed or the time element, strength or the energy element and coordination or the quality element. Many studies have been made with respect to all these three aspects. In practical situations time is a very important element. A relatively small difference in reaction time may make an enormous difference in efficiency. In a broad way it may be stated that the highest speed of reaction is between 16 and 45 years. Strength also increases rapidly with age. In a practical situation effectiveness of action depends both on strength as well as coordination. Coordination includes both the accuracy with which the movement takes place and the ease with which it can be given a rhythmical or serial character. Any kind of activity involves the coordination and integration of many different muscle groups. The energy of motor coordination increases rapidly during childhood and reaches its peak in early maturity between 20 and 45.

(d) *Some aspects of the learning of skills*

Because of his quick learning man is able to acquire many skills and much knowledge in a short time. In a general way it may be stated that learning is a progressive organization of behaviour so that in any skill the individual passes from awkward and clumsy movements to smooth and efficient movements. In other words, at the beginning stages in acquiring any motor skill, whether it is cycling or playing tennis or using the typewriter, the individual shows a marked lack of organisation. In contrast the expert impresses the observer with the ease and smoothness with which he functions. In fact when the master is playing or doing the work, the whole performance seems deceptively simple and easy. Apart from lack of coordination and the presence of superfluous and unnecessary movements, the beginner also gives evidence of tensions and feelings. Thus learning a motor skill involves both the central nervous system and the skeletal muscles and also autonomous nervous system together with the visceral muscles. The skeletal action is quick, specific and limited, does not persist. On the other hand, the vasomotor

or smooth muscle reaction is relatively slower and persists longer. It is also diffused and widespread. That is why we cannot localise our feelings nor can we describe them accurately. It involves the increase of heart rate, and breathing and the inhibition of digestion. Learning of skills involves a change from smooth muscle reaction to skeletal muscle reaction. In the early stages of learning an individual is tense because he is frightened by the new situation or he may be angry that he is put into a new situation and so he feels embarrassed. The purpose of tension is to mobilise the resources of the organism and make energy available for activity in order to meet the new situation. Consequently, the organism reacts with lack of organisation. On the other hand, after many repetitions there is smooth, easy and balanced function with slight internal involvement. That is why the expert is calm, cool and balanced and his movements are almost mechanical. Both the coolness and the skill of the expert are products of learning. Even the expert when he has to make new adjustments will lose his coolness as well as his skill at the moment.

Motivation is very necessary for the learning of any skill. An optimum level of motivation must be established and maintained in order to ensure effective learning. In fact the degree of motivation can be estimated from the persistence of the particular activity and the amount of effort expended in order to improve performance. There is also the factor of transfer. A person who has learnt a wide variety of skills is able to learn new skills with greater ease. As we have already seen in Chapter II "readiness" is very important in the acquisition of a skill. Special training before this period has little or no long-term effect. Complexity of the skill also influences the rate of learning as well as the final level of proficiency. Experimental work has also shown that the learner should be given optimum quality and amount of information about his performance (1; 217-299). The more specific the knowledge of performance the more rapid the improvement and the higher the level of performance. It has also been found that "mental practice" can help a great deal in the learning of a skill. If the learner imagines and pictures to himself the various movements it helps him. Forgetting the skills can be minimised by over-learning and by providing brief periods of practice periodically. Studies in accidents show that in regard to them personality factors have an important influence (2). Studies have also shown that films are very effective in teaching more complex skills (17; 65-90).

The old adage "practice makes perfect" is not completely true. While it is true that practice gives the opportunity for the skill to become organised, mere repetition by itself does not produce perfection. It is repetition under conditions of strong motivation, great interest, and some measure of successful performance that leads to improvement. Thus what is important is that the practice should be under conditions which are real and meaningful to the individual and under which he receives satisfaction for successful actions.

Instruction enables the learner to profit from the experience of others. It not only helps to cut short the period of trial and error, but also helps to learn the technique and attain good form. One of the common errors in teaching motor-skills is to make too critical comments on the actions of the learner. These adverse comments cut down his motivation and may lead to a loss of interest. A good teacher usually allows the beginner to practice for sometime and it is only when the beginner seeks help and appreciates the need for critical comment that the teacher will sympathetically instruct. Demonstration is a very important aspect of instruction. Long ago Goodenough and Brian (7; 127-155) took three groups of children who had to throw rings at a post. For one group there was neither instruction nor criticism. The second group was criticised for all the movements and the third group was given demonstration and positive instruction. They found that all the three groups progressed in the 50 days of learning. But the greatest progress was made by the group that was given demonstration and instruction. The criticised group was the worst and the uninstructed group came in between.

(e) Some results of measurement of motor skills

We may now briefly describe the results of the work in the last 20 years regarding the measurement of motor skills. As we have seen, we use the term skill only when many receptor and effector functions are interlinked so that there is an order in the succession of movements with a certain direction, as, for example, in football or in manual work in a cottage industry or in a factory or when a surgeon is conducting an operation. As Bartlett writes "In all these instances.....there is a continuing flow from signals occurring outside the performer and interpreted by him to actions carried out; then on to further signals and more action, up to the culminating point of the achievement of the task, or of whatever part of the task is the immediate objective. From beginning to end the signals and their related actions form a series, not simply a succession. Skilled performance must all the time submit to receptor control, and be initiated and directed by the signals which the performer must pick up from his environment, in combination with the other signals, internal to his own body, which tell him something about his own movements as he makes them" (4; 14). Experimental work has shown that we can set up situations in the laboratory in which signals and responses to signals can be set up in an order of significant sequence. Such experimental work has revealed that the most important characteristic of expert bodily skill is 'timing'. This refers to the regulation of the flow from one component to another component in such a way that in the course of action there is no appearance of hurry, nor any unnecessary delay. Thus when the expert is playing a ball game, or using the typewriter, or weaving, it looks as if there is ease as well as smoothness. It has been found that timing has little or nothing to do with the speed with which the

task is done. It has reference rather to the regulation of the succession of movements. By means of constant exercise the initial long intervals between component movements are shortened and the short intervals are lengthened so that there is neither hurry nor delay. Further it has been found that this depends upon the perception of the signals as well as the anticipation of what is to come next. Another leading feature of skilled performance is that when a moving object reaches a certain position with respect to the operator, he must take appropriate steps to move it to another position. The next position may be something which the operator decides for himself as in most ball games or is something which is assigned to him as in industrial assembly operations. Experimental work has also shown that skilled performance reaches a certain stage beyond which the further input of signals cannot produce a result. Either these new signals are not noticed or they are ignored. On the other hand if they are noticed, an attempt will be made by the operator to modify action on the basis of the new signals and errors will follow. Thus after a certain stage is reached, further improvement in skill does not appear to depend on additional signals, but it is only a matter of improvement based on exercise.

III. GROWTH IN KNOWLEDGE AND UNDERSTANDING

(a) *Some wrong conceptions of education*

The popular conception is that the mind is a store-house for facts. Consequently, learning is identified with acquiring or absorbing facts. This view leads to stress on memorization. This outlook has deep roots in our cultural tradition. In the ancient days knowledge was preserved and transmitted from generation to generation through memorization. But even in the ancient days no person was given credit for learning if he had merely a good memory. A sound scholar is one who not only has information but also who is able to use the relevant information in a given situation. In other words, the facts and information that we have assimilated should become a useful part of our life as functioning individuals. While it is true that an educated person generally knows more facts than a person with less education or no education it does not mean that education is a process of amassing facts. We look upon that person as successfully educated who has developed proper concepts and frames of reference which make it possible for him to use what he knows and to acquire further relevant facts and information. That person is well-educated who is able to see the interrelationships between the facts that he already knows and the relationship between the known facts and the present situation so that he can reach the proper goal. Thus seeing inter-relationships not only makes information more meaningful but also makes it more useful.

Another assumption was that knowledge exists in its own right in a book before learning begins. Consequently, it was assumed

that all that the learner has to do is to try and acquire the knowledge which is already there. If any boy fails to do this he is punished. Modern developments have shown that children cannot learn something in which they lack experience and purpose. Even if a child is made to learn by threats and punishments at the school and at home, he quickly forgets it after the examination is over because the purpose of collecting the information is to pass the examination and when that is over most of what is learnt, as experimental work has clearly shown, is forgotten. Another wrong assumption is that if something is "properly learnt" it will be permanent and it cannot and will not be forgotten. Snygg and Combs write "One of the primary reasons for the ineffectiveness of our formal methods of teaching is that facts exist in the phenomenal field of an individual only if they have personal meaning for him. Facts that have no relation to him or his life task do not emerge into awareness, or they cease to exist in his field as soon as their irrelevance has been discovered" (16; 211).

(b) *Education and the Self*

Learning arises, as we have seen in Chapter II, when the infant attempts to meet his needs and we may add when the individual attempts to ward off anxiety. The infant learns a good deal before he goes to the elementary school. However, the traditional outlook is that learning starts in the school and education consists in the transmission of skills and information. So according to the traditional approach to education the school prepares a curriculum which provides for the learning of fundamental skills like the 3 R's. and fundamental information like history, geography, civics and rules of health. As against this traditional approach there is the modern "conceptual" approach. According to it learning is aided and supported when the various experiences of life, inside and outside the classroom are seen as inter-related. So this newer point of view tries to communicate not only information and skills but also the inter-relationships between them. According to Snygg and Combs neither of these approaches are satisfactory. "As long as our schools persist in attempting to direct the child into activities which do not provide him with opportunities for immediate self-enhancement (*i.e.* meeting his own needs as he sees them) children will show great ingenuity in avoiding these activities" (16; 209). Thus real learning can take place not by the manipulation of environment outside the perceived self, but by changing the way in which an individual sees himself and his environment. In other words, education is not merely a process of acquisition of skills and information or a process of concept formation. It is essentially a process of attitude formation. According to this view education must penetrate the inner circle of "self-system" of an individual. Children cannot learn to think and act by themselves. Neither by practising skills, nor by memorising facts and information, nor even by learning concepts. They can learn to think and act by themselves only when they want to

become responsible and mature citizens. In other words, the child must develop a positive attitude towards himself and his ability, towards the teacher and the parent and towards society and humanity as a whole. This positive attitude towards himself can be generated only when he feels that the teacher and the parent look upon him as an important and significant individual. Thus our approach to learning must be based on the way in which an individual perceives himself as a person with self-confidence and with the ability for 'self-exceeding' as Arobindo puts it (153 ; 642-44).

(c) *Perception and its training*

A large part of our learning is accomplished through perception. Without perception we would have neither memory nor imagination. Perception furnishes the experiences that promote understanding and help reflective thinking. While it is a fact that we learn through perception it is also a fact that *we learn to perceive*. For example, the city-bred person is often unable to make fine discriminations needed to see a wild animal in the forest, whereas the tribal man of the forest is easily able to do so. This difference is not due to any difference in visual or auditory or olfactory acuity. It is due to differences in perceptual training. Similarly not only the tribal man and the village-man, even the small town man, becomes bewildered when he goes to a big city with its fast moving automobiles and huge buildings and the din and the noise. While it is true that we do not have to learn to have sensory experience, it should be remembered that we have learnt to perceive objects. For example, we have to learn to identify one noise as thunder, another as the sound of a motor-car and the third as the sound of an aeroplane. Thus perceiving involves the factor of meaning. The relation between sensory experience and meaning is mainly the product of learning. We not only perceive objects as objects, but also perceive them as symbols standing for or representing something. The spoken word, the printed word, the number, the code, the signals are all symbols. They have a meaning of a higher order since they signify facts beyond themselves. A large part of education consists in learning these symbols, verbal, numerical etc. Consequently, our perceptions do not come ready made like sensory experiences. They are also capable of growth and change. They become more definite, more refined and specific; they also become enriched in detail. Just as repetition leads to the economy of performance in motor-skills and the elimination of superficial movements, similarly repetition and even more instruction enables an individual to have economy in perception and helps in the elimination of the superficial adjuncts. Among these modifications which arise as a result of repetition are the alterations in the sensory patterns, changes of meaning, and, more important than all these, the reduction of cues so that we are able to detect small differences with greater ease.

Our perceptions are modified and developed by the very activities themselves. For example, in the infant the motor activity is an important source of perceptual development. By swinging its arms and legs it makes contacts which provide the experiences out of which perception of concrete objects emerge. Similarly, by placing objects in the mouth the infant is able to get an enriched perception. Another activity by means of which perception is enriched is by deliberate inspection and observation. This is also a matter of training. Experimental work has also shown that perceptions are influenced by needs, motivations and value systems (10).

While it is true that perception can develop without any special training on the mere basis of various activities of the child, we should not fall into the error that perceptions are ready-made. In the kindergarten and in the schools for the feeble-minded there is deliberate training of perception. By training we can make our perceptions keener and more reliable. We can eliminate many sources of error and incompetence. We get the most exact and reliable knowledge from the observations of the scientist. In scientific training special measures are adopted to overcome factors that cause errors on the basis of mental set, bias, prejudice, anticipation, etc. The chief characteristic of the scientist, which he obtains by training, is the maintenance of an attitude free from personal bias when he seeks to discover facts by observation. He also repeats and checks his observations. Finally, he uses instruments to extend the limits of his sense-organs. We can also see perceptual training and its results in the alertness of the proof-reader, the tea-taster and the musician who can easily detect the slightest defects. Thus we find that in every field of human endeavour the expert is a person who is well-trained to make observations which are keener, more critical and more analytical. Gibson (6; 401-431) showed the effect of training upon perceptual judgement. This is why nature-study, field trips, laboratory work, shop work etc. have now become important adjuncts of education. There is also the problem of training in social perception. It is more important to learn the moods, the attitudes and the motives of people by perceiving their actions, facial expressions, their words and so on. Some persons are very sensitive to social stimuli, but many are inept and ignorant. This is due to lack of training in social perception at home, in the peer group, and in the school. Training in social perception is as important as training in the perception of objects and events.

(d) Concept-formation and understanding

Understanding and comprehension go beyond perception as they involve the integration and organisation of the knowledge obtained through perception. Understanding involves concepts. Concepts are abstractions from the perceptions. In the class-room understanding and comprehension are the most important cognitive functions. Reading and study depend upon it. Without it neither explanation nor

demonstration can serve their purpose. Comprehension proceeds from vague impressions to clear-cut distinctions. It also proceeds from few associations to an abundance of associations. For example, to an ordinary person and even to an experienced driver, a motor-car is just a mechanical contrivance for riding but to an expert mechanic the car is a complex assemblage of parts. He knows all the parts and the purposes of each part and the relation of each part to all the other parts. That is why we go to him when the motor-car does not start. In other words, the mechanic's knowledge of a car is far more detailed and coherent than that of the driver, which may be more detailed and coherent than that of an ordinary person. Similarly the growth of scientific knowledge is a process of making finer and finer differentiations. That is why the scientist uses technical terms to designate delicate distinctions. It is because of this knowledge that he is able to have a deeper penetration into the object and more exact understanding of it.

Concept formation is thus one of the most important of our learnt activities; it is at the basis of our thinking as well as reasoning. A concept is acquired when a person treats various objects, events or ideas as belonging to a class and makes equivalent or nearly equivalent responses to all the members of that class. The child builds concepts when he is exploring his environment. By such experiences as looking, touching etc. he notes that the various objects in the environment have similar shapes, smells etc. Gradually he groups some objects and excludes others. This process is facilitated when the parents use certain words to designate groups of certain objects. Concept formation mostly occurs at a non-conscious level. Language helps us to fix these concepts. Welch (18; 175-206) tried to investigate the development of genus-species concepts among children between 21 and 72 months. He gave them pictorial and toy representations of such things as cows, pigs, horses, tables, chairs, oranges and bananas. They were asked to select the animals, fruits, vegetables and other group concepts. This ability was attributed to the knowledge of first order abstract concepts. Next they were tested for more inclusive groupings such as food, comprising both fruits and vegetables. Success here was given credit as knowledge involving second order concepts. Welch found that the mean number of abstract concepts gradually increased from one at the age of two years to 20 at the age of six years. Many batteries of verbal as well as non-verbal intelligence tests use classification tests. It may be assumed that as the individual grows older higher orders of concepts emerge. Scientific discipline as well as philosophic discipline imply concept hierarchies of higher orders. Much of the formal education consists in the learning of the meanings, implications and correct usages of such concepts as time, space, energy, velocity and gravity.

(e) *Thinking and its Training*

It is generally assumed that thinking is an activity which occurs at the later stages of human development. While it is true that most

human beings hardly exercise their ability to think and lead their lives on the basis of precedents and social conformity, experimental work has revealed that thinking occurs among infants as well as adults, among the feeble-minded as well as the brightest individuals. Even among animals symbolic processes play a role in solving mazes or problem-boxes. Thinking essentially consists in the manipulation of symbols instead of the manipulation of objects and situations in an environment. While fantasy involves the manipulation of symbols in a haphazard or non-directed manner, reasoning depends on the manipulation of symbols directed toward a certain problem and keeping very close to reality. Thus in a broad way we may classify thinking as of three kinds : thinking that is purely based on wish as in dreams and day-dreams, thinking based on feelings and values as in art and literature and thinking that is very close to reality as in scientific thinking.

Investigations of the behaviour of children in problem-solving situations reveal a complete range of behaviour from random activity as in the animals, to immediate solution of problems with ability to state the principle involved. Investigations have also shown that problem-solving involves exploration and the elimination of wrong leads. We find that flashes of insight may occur at all stages of the process, particularly when confronted with modes of attack which are not workable. Immediately such modes of attack are eliminated without trying them concretely. Problem-solving also involves persistence. One has to stay with the problem till it is solved. As in learning, in problem solving also, an individual starts with a new situation to which he is motivated to respond. As in learning, in problem solving also, there is some need or tension. In problem-solving, however, the person reacts not by concrete movements, but through ideas and words. He 'mentally' tries out the various suggestions and discards those which do not work and selects and retains those which work. After this there is the actual testing of the solution reached and finally its statement in symbolic terms. Success in problem solving is related to two facts : (a) the fertility of suggestions, (b) the critical capacity to examine these suggestions or possibilities in order to determine their workability. Finally there is the actual testing of the ideas or suggestions which have been found workable. One of the most important tasks of education at all levels from the nursery school to the University is to train pupils to solve problems. It must be confessed, however, that it is only in recent years that we are realising the significance of training in problem-solving. According to traditional ideas it was assumed that education consisted in the transmission of the skills and information available and already acquired by the teacher. The important thing in life is not acquisition of skill and information, but the ability to use the skill and information in concrete life-situations or in abstract thinking concerning problems of matter, life, mind and society.

As we have seen above, training is very important to think persistently with a purpose in relation to reality. However even

now most of the teachers are following the traditional method with emphasis on the imparting of information rather than stimulating the pupil to think. In the science course, laboratory work has now become an important part of education where students are given opportunities to observe, to think, and to experiment. Similarly, in the medical courses the case method of study has become a very important aspect. This method is now being used in courses in psychology, sociology, administration, social work etc. The case method of study based on individuals as well as groups and institutions is a very important technique to train students in thinking. There is also the project method or the activity method of instruction. It is always more difficult to develop projects and programme activities in an educational course than to pour out information in a formal fashion. When the children are given responsibility, and provided with opportunities, to do things on their own they will be able to develop skills of observing, thinking, organising, making observations and speeches, all of which will be of immense value when they become adults. Programmes can be developed where even children of 10-12 years of age can organise activities, manage clubs, run school papers, and make speeches and thus obtain training in analysing many complex relations. These activities should not be looked upon as extra-curricular activities. This implies that there should be a change in the definition of the purpose of education. We have a very difficult task in overcoming the resistance arising out of tradition, apathy and pessimism.

Another important discovery of recent years is the emphasis upon group thinking and its possibilities. We may say that this is really a rediscovery, particularly in India where there has always been a faith in group thinking. In ancient days as well as in the present time in the villages, whenever there is a problem which cannot be tackled either by an individual or by a family, the matter is taken up before the *panchayat*, a council of elders which may be formal or informal. Any decision that is arrived at by a group of experienced persons who are disinterested is accepted as a decision for further action. Many concrete problems can be solved by means of group thinking. This also requires training. An actual case may be given by way of illustration. The present writer was invited by the Head Master and the management of a high school to help them in solving some problems connected with the improvement of standards in the institution. At a meeting of all the teachers the problem was posed and suggestions were invited. One experienced elderly gentleman stood up and spoke for about ten minutes giving a number of suggestions. When the others were invited to give their suggestions each one of them asserted that he had nothing more to add, that all that could be said had been said by the senior member. With a little persuasion each person was asked to speak for a couple of minutes even if it meant merely endorsing the suggestions made. When each person was speaking notes were made and ultimately it was found that while the

first speaker gave five ideas, the rest of the speakers together gave about 10-12 in addition. All these ideas were later discussed and it was found that each single member of group became very active in making further observations, suggestions and modifications and as a result of group thinking a number of new ideas came up for which no single person could take the credit. One erroneous assumption is that thinking can be profitable only when there is already some special information. This assumption is partly correct and partly wrong. It is true that past experience is very necessary to tackle any present problem. But it is not true to imagine that mere information is sufficient. Most of the ideas in the field of ethical values, social organisation, administration and technology have arisen as a result of keen interest and continuous application rather than out of vast scholarship. Of course, this is not to belittle scholarship and information. Only we should give it the right weight and pay more attention to spontaneity and creativity which we are not prone to. That is the reason why in recent years seminars and group discussions are becoming more prominent. Even in the elementary school the teacher with the right outlook can stimulate small groups of children 9-10 years old to think creatively and concretely. As we have seen above, ideas, plans and inventions are products of thinking. But their value depends upon the facts of the situation. In other words, thinking has to be judged on the basis of the way in which it meets the needs of the situation and solves the problems of life.

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When we try to analyse the process by which the sense-impressions are formed we find that they are integrated, organised and differentiated into perceptions by the central nervous system. How this organisation takes place is too intricate and so far has been beyond human understanding. However, the effect and the growth-changes of perceptual functions are well understood by now. A great deal of research has been conducted on the overt aspects of the perceptual process, without much success at the understanding of antecedent neurological dynamics.

Attempts at differentiation between sensation and perception go far back into the history of philosophical and psychological thought. A simple discrimination between the two functions can be expressed thus : sensations are the elementary impressions gathered by sense-organs with little or no interpretation given by the central nervous system while perceptions are the result of interactions between the sensory and central nervous system processes. In perceptions the sensory impressions are interpreted in accordance with specific social and psychological variables. Concepts, in this context, may be explained as identifiable and more or less stable perceptions which help the individual in his adjustment with the environment. Thought processes are not directly observable and as such can be interpreted as perceptual processes when the sensory data originate within the individual's neurophysiological structures.

With the above definitions of sensation, perception, concept, and thought processes it becomes clear that perceptual and conceptual development of an individual plays a vital role in adjustment with the environment. Sensory-perceptual and conceptual processes together with the motor outlet determine the total pattern of an individual's life, his interaction with his environment and his adjustment with his setting. As such, the study of perception and concept formation and their role in problem-solving behaviour becomes necessary for the psychologist before he can hope to understand the individual. In this chapter we shall discuss these phenomena in some detail.

Perception : We have defined perception as the result of interaction between the sensory and central nervous system processes. In simpler words, perception is the impression made by an object, through processes of a sensory organ and the central nervous

system. Besides this interaction between the sensory and central nervous system processes perception involves an interpretation given to these impressions by the individual. These interpretations are determined by specific social and psychological variables.

Experiments have been designed to determine the role of these social and psychological variables in determining the perception of a specific object. Bruner and Goodman (2) showed different coins to children coming from a poor background and also those coming from a rich background and asked them questions about the size of those coins. They found that the poor boys consistently perceived those coins as much larger than the estimates of the other group. Carter and Schooler (3) conducted a very well-designed and controlled follow-up of the study conducted by Bruner and Goodman and found that poor children on the basis of memory alone perceived coins as being larger than did the rich children. Thus these studies proved the important role played by the needs, social status and the background of a subject in determining his perception of an object. Precisely the same situation has been found to be perceived quite differently by people coming from different social backgrounds.

Direct and indirect social instruction is another factor that makes a difference in our perceptions. Parents are always telling children what to do and what not to do; they are instructing them as to what is appreciated and what is not appreciated in the circumstances under which they are living. On the other hand, when no direct instruction is given unconscious change in the facial expressions, moving away from certain people, turning away from certain things and sudden dismissal of certain topics, all leave a lasting effect on the children. All these aspects of adult behaviour influence the perceptual development of children.

Certain Characteristics of Perception : If we accept the influence of social learning on perceptions then the natural conclusion is that perception is selective. Every moment of our life we are presented with a multitude of objects, people and situations but a little analysis will make it clear that we do not perceive all of them. Occasional complaints from friends that we did not return their greetings at a particular moment illustrate the fact that perception being selective at that particular moment we must have been perceiving something else which proved to be more important according to our interest of the moment. Besides, perception being selective in nature it has certain other qualities as well which are important and worth discussing here. We have a tendency of perceiving objects as *wholes*. Very often one would notice that even when a three-sided figure is presented to the subject with the fourth side broken half-way, the subject would call it a square. It is true that all these sides are equal and meet each other at right angles, yet the fact is that fourth side is incomplete and unless it is complete the figure cannot be called a

square. The subjects perceive it as a square because they have this tendency to perceive objects as whole and when there is a gap they tend to fill it up.

While perceiving, the individual has a tendency to organise different elementary sensations into a meaningful whole. This means that different sensations are organized together to form a whole rather than to be unconnected collections of elementary impressions. This combining together of the sensations lends meaning and interpretation that is an essential component of perception. Because the individual combines and co-ordinates these sensations we find different meaning and interpretation and therefore a different perception of the same object.

This patterning of different sensations is the principle put forth by a famous school of psychologists known as the Gestalt School. Gestalt, a German word, means a pattern or a configuration. Gestalt psychologists have done extensive work in the field of perception and their main theme is that while perceiving we look for a pattern, we make patterns if they are missing and when designs are provided the process of perceiving is greatly facilitated. They have mentioned some of the basic principles according to which this patterning takes place ; in other words the forming of patterns for the convenience of perceiving is not a haphazard process. It is determined by the following factors :

(a) Figure and ground relationship : To a large extent the nature of the object perceived is determined according to the background against which it is perceived. A mother as she is perceived by a child is very different from the same mother perceived by him after he grows up to the adolescent stage. This difference in his perception is due to the difference between the background or the circumstances and experiences against which she is perceived. Gestalt psychologists have explained this phenomenon by use of picture cards which change the figure perceived according to the part taken as figure and background. This principle is greatly exploited in industry where textile designs are made according to the figure and ground relationship. Arrangement in show-windows needs the art of putting the best fitting figures against the best available background. A designer and window in-charge attempts to control the perception of shoppers by controlling this figure and background relationship.

(b) Similarity is another factor that determines the patterning in perception. Objects that are similar in appearance are easier to be grouped together. Therefore in a pattern if two types of figures are used, namely, circles and squares, the circles will be combined together more easily than the circles and squares. It is advisable, therefore, to arrange the pattern in circles only or in squares alone. If the pattern is mixed up among circles and squares, it will be hard for the perceiver to sort out the pattern from the total assortment.

(c) Proximity or nearness in space is another factor in determining the patterning in perception. Objects that are near each other in space are easier to be combined and integrated together. Dots or figures arranged close to each other are easier to be grouped and perceived as a figure than the ones scattered all over, distant from each other.

(d) Inclusiveness: An inclusive pattern is more outstanding and striking than the one that misses inclusiveness. A pattern that includes all the elements in the field is outstanding and enjoys an advantage over other patterns that are less inclusive in nature.

(e) Continuity helps the perception by yielding the pattern more readily. A continuous line, or a row of figures is more effective and more easily perceived than a discontinuous line or a broken row.

(f) Closure: As mentioned in the general remarks on the patterning involved in perception, people are found to have a tendency to close up the gaps that may exist in the patterns or figures. In figure 1 the patterns are observed as a square or as a letter M in spite of the fact that there are gaps. This happens because we fill up the existing gaps and tend to see them as familiar figures. From this follows the next principle of patterning that makes perception more convenient.

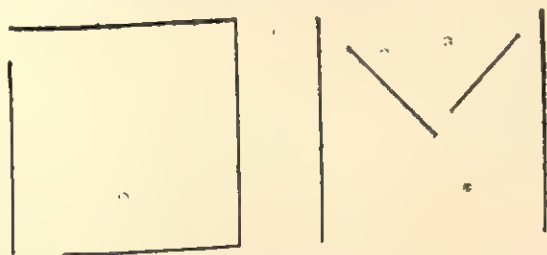


Figure 1.

(g) Familiarity and past experience with objects. In the above figure the letter M can be perceived only by those people who have learnt the English language for some time at least. For the illiterate or those who know only Hindi the recognition of M as a letter in the alphabet of another language is not possible. Similarly a square cannot be observed by subjects who have had no experience with geometrical figures.

Another quality of perception that deserves our attention here is that we perceive objects in spatial relations. We recognise the relations that different objects enjoy with each other as far as physical space is concerned. It is because of this factor that we can perceive distance. Objects arranged close together and different in size give

us an impression of distance. This is very effectively used by the artists in their paintings. In a landscape painting a cluster of trees smaller in size when arranged next to another cluster of trees larger in size gives an impression of distance and depth in space. Similarly sounds loud and soft help in determining the perception of distance and depth.

Perception of motion is another proof of the fact that we observe spatial relations in objects. Objects that are too close to each other in space are perceived as moving. However, arranging them close to each other alone is not enough to determine movement. Besides being close to each other they have to follow each other in quick temporal order. The quicker they follow the faster do the objects seem to move. This leads us to our last quality of perception and that is that we tend to observe objects in temporal relationship to each other.

Determinants of Perception

From this discussion of general qualities of perception we can derive certain determinants of perception. The first and the most important determinant would be the condition of sense-organs and the nervous system. A defective organ will influence the perception and so will the disfunction or a lapse in the functioning of the brain. Thus it becomes imperative that for perception the sense-organ as well as the brain should be in perfect working order.

Past experience plays an important role in perception. As already emphasized under the characteristics of perception, familiarity and past experience of the individual are important factors in what and how he perceives. An individual who has been involved in a car accident, will perceive heavy traffic apprehensively for some time at least. A burnt child perceives fire with fear.

Besides the remote past experience, the immediate attitude or the set of the individual is also important in determining the nature of perception. The common saying that two and two added together make four 'chapaties' for a hungry man is an appropriate example to illustrate how the immediate need and attitude determine the content of one's perception. False perceptions are very common in case of intense needs. A thirsty man would swear that he saw water in the desert. This is evidence for the important role that the momentary need and attitude of mind play as determinants of perception.

Formation of social stereotypes is another evidence of the attitude affecting our perception. In this case, it is the social perception that is being influenced. The perception of certain undesirable traits in a particular community or caste can easily be proved to be the result of certain attitudes that we have developed towards a particular

group of individuals. Disturbances during the partition of India gave very clear evidence of the influence that attitudes play in our perception of the members of another community. Under such circumstances we tend to ignore a great deal of reality and allow our perceptions to be coloured with the stereotypes that we hold.

Theories of Perception

As mentioned already a great deal of work, has gone into the study of perception. Psychologists have tried to study and explain the nature of perception. As the outcome of this labour we can say that there are four main trends in the explanation of perception.

(a) *Physiological or Peripheral Theory* : Early psychologists with a leaning towards physiology put up this theory. In this theory the sense organ plays an extraordinarily important role. It is the organ that receives the impression or the image. Perception is nothing else but the translation of this image. The image received by the organ is conveyed to the brain, the brain does not play any significant part, according to this theory, except for the co-ordinating centres that establish different links needed. The main area of experimentation with these psychologists was vision. They gave importance to the retina and the optic nerve and talked of retinal images. This theory could not stand the test of further research in perception through other sense modalities and as such is not very popular now.

(b) *Behaviouristic Theory* : Perception for Behaviourists is not very different from any other pattern of behaviour. Every behaviour is an action and reaction link established through learning ; so is the perception of different phenomena. Perception also involves habit formation, learning and generalization. Patterning and organization in perception has not been explained satisfactorily by this school of thought.

(c) *Gestalt Theory* : In our discussion of the process of perceiving we have borrowed rather liberally from this theory. It has been done because this is the theory that has so far explained perception in the most satisfactory way. This theory does not consider perception as solely dependent on sense organs ; on the contrary it attaches more importance to the part played by the central nervous system. We perceive patterns or configurations, according to this theory, because of the functioning of the central nervous system. Because of the emphasis placed on the central nervous system, this theory is often referred to as the central theory of perception as against the peripheral theory

discussed above. It has stood the test of research because the neurological evidence has been helpful in substantiating its basic principles.

(d) *Hebb's Theory of Perception* : Hebb, (7) a Canadian psychologist, has done a lot of work on the understanding of perception. Behaviourists have been placing importance on learning while Gestalt psychologists have left very little to be contributed by learning. Hebb, through certain experiments, has come to the conclusion that although certain characteristics are innately determined yet there are certain other characteristics that can be proved to be the result of learning and long periods of practice. He has been able to separate the effect of learning from that of the innate ability and thus proves his hypothesis. His theory is more or less a compromise between Behaviouristic and Gestalt theories of perception.

Imagination

While discussing perception we noted that the individual maintains his contact with the outside world through perception. Once having perceived a phenomenon we notice that he tends to retain the impression over a period of time ; and at any future time he can recall the experience through the process of remembering.

Remembering is carried out by means of memory images. Imagination or the continuous formation of images is an important psychological phenomenon which can be defined as a cognitive process which takes place in the absence of actual sensory stimulation. However, it is closely related with the past experience of the individual and is based on his previous perceptions. Imagination always starts with the past experience and the perceptions that an individual has had.

Imagination is of two types. One is simple reproductive imagination in which the individual recalls and reproduces the past percepts as they were experienced by him. It is more or less a mechanical type with very little scope for new ideas and concepts to be incorporated. On the other hand, the second type of imagination is called creative imagination, is the type that is a great asset to the individual. Here a person starts with old familiar percepts but makes use of his creativity and gives new colours and shapes. The child's play is based on this imagination and so are many of our modes of amusement. The artist exploits his imagination to the full and creates objects of art that can be appreciated and enjoyed by others. To enjoy art, it is essential that they also have creative imagination in them.

Imagination is also essential for discoveries and inventions. A scientist has to get away from the beaten track in order to hit upon a new idea which he can utilize for inventing new things. Fairy tales are the play of imagination and so are the various myths. In short we can say that we find imagination enriching our material as well as the cultural life. Imagination also plays an important role in reasoning and problem solving. An individual who has creative and productive imagination is good at manipulation of concepts and ideas; the result is his facility with problem situations and their quick solution. Imagination is a great help to mathematical ability as well. Symbols are easier to handle for a person who is quick at forming images and patterning them in sequences than for him who has to indulge in motor manipulation of objects before he can handle symbols.

Images

Our imagination is built upon our capacity to form images. An image is a mental picture of a particular object when the object is not present. It differs from a percept in this respect, that in case of a percept an external stimulus is always present. Very often it becomes difficult for the subject to distinguish between a percept and an image. This happens when the image starts as a percept without the knowledge of the subject. In one of the experiments, Perky asked the students to imagine a few objects that he named. Without the knowledge of these subjects it was so arranged that from a hidden projector the objects were projected onto a translucent screen. The result was that the subjects were very categorical about their having formed these images. Even when the object was in contradiction with what they thought their image should have been they insisted that they were forming images while, in reality, they were forming percepts only.

Images can be formed around all the sense modalities. In other words, there can be as many kinds of images as there are the number of senses. We can imagine a person's voice as we can his face. We can imagine the taste of a dish as well as its colour. People have reported imaging certain muscular pains and kinesthetic sensitivities. An image is usually much weaker than the percept and it is fleeting in nature. There is something like individual differences among people so far as forming images is concerned. There are people who are good at forming images; others are weak.

There is still another kind of individual difference among people so far as images are concerned. Every person has his own type of prominent imagery. There are people who mostly imagine in terms of visual images, while there are others who have auditory images with more ease than any other; there are still others who have olfactory images. However, we should not conclude that those who have a visual type of imagery are good at only that type.

On the contrary, they can have other types of images as well but their most prominent and outstanding mode of imagery is of the visual type.

Eidetic Imagery

In general, images are weaker than percepts, and are less vivid and short-lived. Minor details are usually omitted from images and they have a tendency to fade away soon. However, some subjects are known to have an unusual type of imagery which is very clear and vivid. Often these images are reported to be as clear and vivid as percepts though the stimulus is not present. Even minute details are vivid to the subject, so much so that he is able to reproduce them from memory. These images have a longer duration than usual memory images and they are known as eidetic images.

Researches designed for the study of these images have come out with the finding that this type of imagery is most frequent with children below fifteen years of age. During adolescent years the capacity for eidetic imagery seems to fade away. It is suggested that psychological functions during adolescent years and afterwards do not require such detailed and precise images.

Synesthesia

Another peculiar type of imagery exists when the subject reports an image belonging to one sensation aroused by a different sense modality. Often subjects report of colour hearing, namely, they will have an image of a blue voice or a brown voice. This type of imagery is called *Synesthesia*. This is supposed to be due to certain associations between different sense modalities. Nobody has yet been able to study the nature or cause of these cross sense associations but in general it is suggested that such images are due to certain associations formed in childhood. This type of imagery, like eidetic imagery, is more frequent during childhood than in after years. If one studies the common language, one discovers a great deal of influence of this type of imagery because we often talk of sweet-voices and hot-music. While reporting synesthetic imagery the subjects have more frequently reported cross associations between vision and hearing than between other sense-impressions.

Concepts

Concepts are vital to the individual because they provide the basis for most of our symbolic behaviour. Our language is nothing but a configuration of symbols which we have learned to associate with different social concepts. Concepts allow economy in reasoning and problem-solving and some of the most generalised and definite concepts are applied in higher mathematics and logic. Concepts not only allow us economy but also go a step further in facilitating the

development of further concepts by the application of generally accepted rules. Considering the importance of concepts it is worthwhile giving some thought to their development, nature and the factors that influence their functions.

Development of Form Concept

Researches conducted in the field of concept-formation have given us enough reason to believe that form discrimination is one of the first discriminations made by a young child. In experiments conducted by Ling (13) form discrimination was clearly evidenced among children at the age of the sixth month. It was further revealed that this concept of form was independent of the concept of size magnitude. In other studies conducted along the same lines it became clear that children can manipulate and correctly discriminate forms before they can recognise them by name. In other words, the concept of form precedes the verbal concepts in the psychological development.

Another interesting line of research is the comparison between the concept development of children and animals. It has been found that children show superiority in concept formation to other primates. This superiority can be attributed to their skill at language and ability at verbal generalisation. Gellermann (6) designed an experiment to investigate the relative ability of chimpanzees and two-year-old children in the discrimination of a triangular form. Besides their superiority in discrimination, these children exhibited definite symbolic behaviour in solving the problem situation. By means of gestures and verbal behaviour children could formulate the nature of their problem as well as clear instructions for solving the problem when no such instructions were given by the experimenter. Other experiments have also concluded with the superiority of children to animals in the discrimination of form, and have attributed this superiority to their ability to use verbal symbols.

Concept of colour comes next in the sequence of concept development and is developed quite early in the life of an individual. The concepts of form and colour develop so close together in age that it is difficult to say which one comes earlier. To determine the primacy of one over the other, Brian and Goodenough (1) planned an experiment with children ranging in age from two to fourteen. They arranged a series of three objects. The children had to match these objects. Two equally good choices were possible. They could match them according to the colour or they could choose to match them on the basis of form. They found that upto the age of three these children showed a marked tendency to match the objects according to their form; from three to six years the colour became the basis for matching objects and from six years to adult age form was again the basis of matching objects together. Later investigators, however, have differed with this study on the form and colour potency in

determining the object choice. Huang (8) was one of those who showed that children at the kindergarten age could be influenced in the choice by colour by making the differences between colours conspicuous. Generalizing the findings of his researches he concludes that with older children form and colour preferences are a function of relative intensities of the two qualities.

It has been further observed that the background against which a particular form is presented makes a difference in the abstraction of that figure. Recognized forms when presented against an unfamiliar background tend to be confused and lost. Crudden (5) designed an experiment in which he taught children between sixty-five and seventy-eight months to discriminate eight pairs of geometrical figures. After an interval he presented these figures to them against unfamiliar backgrounds and asked them to discriminate them. He found that the primary school children were able to abstract these known figures provided the unknown background was not complicated. Girls proved to be superior to boys which Crudden attributes to their superiority in abstract thinking and earlier growth of verbal concepts.

Development of Colour Concept

Studies of colour concept have shown a steady increase in the ability to perceive and use colour correctly. Cook (4) has investigated the development of colour concept rather thoroughly and has discovered that as the age of the child progresses there is an increased efficiency shown in colour discrimination and colour naming. Colour discrimination comes earlier than the naming, thus indicating that the verbal symbols are learned later than the colour concept which developed earlier. Cook's results also indicate that children can discriminate the hues (red, green, yellow, etc.) more accurately than the differences in brightness or saturation.

Smith (22) studied the age trends in colour discrimination by use of an apparatus with two drums attached. One colour was exposed on one of the drums and the subject was asked to rotate colours on the other drum till he got the colour that he judged to be the most like the one exposed on the corresponding drum. The results of this experiment indicated a steady increase in the discrimination of colour saturation, hue and lightness, with the age of the individual. This increased discrimination continued till twenty to thirty years of age. There was an obvious decline in this discrimination which can be attributed to general decline in abilities indicative of age. This decline is parallel to the declining trends that are found in so many other psychological abilities, during the declining age.

Development of Space, Distance and Position Concepts

Concepts of space, distance and position is another important development that the individual goes through. It involves space orientation, understanding of the relative position and the distance

of objects. This development is of vital importance in the normal life of an individual. Our adjustment to our surroundings and everyday environment depends upon the normal development of space concept. While working with the mentally-deficient children Werner (24) hypothesized two stages in the development of this concept. He found that the more primitive concept of spatial relationships involved dynamic visual movements while the advanced stage of these relationships involved none or the minimum of visual movement. This advanced stage, he concluded, was more abstract and impersonal.

Another study conducted by Meyer (14) also supports the postulates laid down by Werner. Meyer worked with pre-school children and tried to test their ability to comprehend spatial relations. Meyer postulated three developmental levels in place of two, as was the case with Werner. The first level was found to be achieved by children at the age of two and a half years when they respond to space relations in terms of what Piaget calls "practical space". In this type of response the objects are present only to satisfy the child's need. Between three and four years of age, the child responds to a "subjective" or "empirical" space, whereby he shows interest in the objects themselves. Still he concentrates on his own activities with the modification that he adjusts them to spatial materials. It is after four years of age only that the child responds to "objective" space. At this stage he starts considering himself as one object among many and tries to adjust his behaviour to the position of other objects in his environment.

Position Concepts : Within the space concept comes the position concept where the judgment has to be made about the position of objects. This concept is much later to develop than the others discussed above. Children gain a functional concept of position before they show the full development of this concept. They verbalize the position and thus reach their conclusions about the position on the basis of those verbalizations. From this, one should not conclude that verbalization is essential for spatial and position concepts. On the contrary, verbalization is a facilitating factor for those concepts.

The position concept has been investigated by Leuba (12) by means of placing a small box in a line, circle, triangle or a square made with twenty to twenty-five other boxes. Before putting this box in the series the experimenter would put a chocolate piece inside this box which the child was allowed to see. Now, the child was asked to locate the box with the chocolate in it. Pre-school children in this experiment were found to be most successful when the box was placed in the end position of a series, that is end of a straight line, apex of a triangle, etc.

The concept of position "middleness" has also been investigated with children of seven, eight and nine years. In this experi-

ment the children were trained with squares of different area. They expected to choose the square with the middle area. After this they were presented with circles of different density. The point to be investigated was whether these children could form a distinct concept of middle-ness or not. The findings pointed out that the concept of middle-ness increased in precision substantially between the ages studied namely, seven to nine years. Some of the children achieved a functional concept of position while they were not able to verbalize the same. Thus, this experiment indicated that the verbalization is an aid in the formation of this concept.

General spatial orientation concept has also been investigated by asking children to locate points in different directions while blind-folded or to draw sketches of directional patterns. As a result of these experiments it has been discovered that the ability to indicate direction, as precisely as is done by an adult, appears between eleven and twelve years of age. Before this, there is an obvious rapid gain in the concept between six and eight years but the spatial orientation is not so good as that of an adult. When asked to indicate the direction of far off places children showed a more precise orientation when they were facing north. However, this precision while facing north is not explained by the results of these experiments.

Size and Magnitude Concept

A study of size and magnitude concept has been made with children ranging in age from a few weeks to three years. Cruikshank conducted a study on infants between ten and fifty weeks of age. He came to the conclusion that some degree of visual size constancy was present at six months of age. It means that children at the age of six months gave evidence that they could estimate the size of an object independently of its distance from the observer. Children between four and five months revealed a certain amount of confusion in this estimate which did not exist at the age of six months.

Psychologists have studied magnitude as well, by presenting children with objects of different sizes and asking them to discriminate the largest from the smallest and the middle-sized. One of these experiments cross-checked the development of this concept by giving one series and then adding another larger object and removing the smallest. This arrangement turned the middle-sized object into the smallest and the largest of the previous series the middle-sized. With the cross check only one two-year old child could show the discrimination. All the studies conducted on magnitude have shown that this concept is fairly well developed by the age of three years. Before that, frequent errors were committed while arranging the objects according to magnitude. All these studies agreed in the finding that verbal responses were helpful for this concept.

Number and Time Concept

Numbers and facility in manipulating them are an essential part of our life today. In most aspects of our life some calculation of numbers is involved. Therefore it is important for us to study the development of the concept of number as the individual grows in age. The importance of this concept is recognised by psychologists in the fact that arithmetic items are included in every test of intelligence devised so far. In the development of number concept psychologists have found three distinct stages. At the first stage the subject can discriminate the numbers. At the second stage he can match numbers and at the third stage he can match groups of different numbers. Thus we can see the hierarchy in terms of difficulty within the number concept.

Time Concept : The simplest study of the time concept consisted in asking questions regarding time from children of different age levels. It was found that younger children used words indicating the present while a little older children used words indicating future and the children had to be still older in age when the words denoting the past became obvious. At the age of two 'today' was the only word indicating time concept; at two years six months 'tomorrow' appeared; while 'yesterday' was in use only at the age of three years.

As far as the general time concept is concerned, at four years of age the child knows whether it is morning or afternoon; at five he knows what day of the week it is; at seven he indicates the understanding of what time, what month and what season it is. It was about the age of eight that he could give what day of the month it was and also what month of the year. It will be observed that children could name the day of the week as early as five but the day of the month and the month of the year they could not name before eight years of age.

In another study children were asked questions regarding things that took place a short time ago and those that took place a long time ago. Primary school children have more accurate responses regarding things that took place a short while ago than the ones that took place a long time ago. The correct time concept was evidenced at the age of twelve; before that, the answers showed all kind of confusion between the present, future and the past.

Concept of Physical Causality

The concept of physical causality and its development among children has received a great deal of attention from psychologists all over the world. Piaget (17) has been the pioneer in this field and has put forward the theory that there is a difference in the explanations of physical causality given by the child from time to time. The maturity of these explanations is a function of the child's age.

According to Piaget, there are three distinct stages in the development of this concept :

First Stage : All explanations are psychological, phenomenistic, finalistic and magical in nature. When asked the question as to why the clouds do not fall, the children at this stage would respond by saying that they do not fall because "They stick" or because "The God Keeps them there".

Second Stage : The explanations are animistic and dynamic in nature. When children at this stage are asked the question as to why the clouds do not fall, their reply will be "The sky keeps them up" or "Man keeps them there".

Third Stage : Explanations are more rational, and logical deductions are used for explanations or explanations are spatial and mechanical in nature. Children passing through this stage will explain the clouds not falling by saying that "The wind pushes them" or that "They hold themselves there so that they do not fall".

Piaget studied the age levels of children for different stages of development of this concept. According to his findings the child covers the first stage by three years and enters the second stage which he masters by seven or eight years of age. After eight the third stage sets in. But the child gives explanations comparable to those of adults by twelve years of age.

Besides these three stages of development Piaget classified the explanations that he got during his experiments into seventeen distinct types. This aroused a lot of controversy and gave rise to a large number of researches in the field. There were psychologists who disagreed with his types, and designed experiments using the precise method that he used. On the other hand, there were psychologists who disagreed with his method and were of the opinion that he got all these explanations because he used an unstandardised method. He asked questions which were not preplanned so that he asked different questions of different children and as much he received explanations according to the type of questions he had asked and the way in which he had asked them.

As a result of this we have two different sets of researches and within these two groups we have findings which are absolutely contradictory in their nature. We have experiments in which Piaget's method was used as precisely as possible but the conclusions did not confirm his types, while a few others did give the same types. On the other hand, there were experiments which used standard and more objective methods and got explanations more realistic and nearer to those of an adult. Within this same group we have a few experiments that used different methods but came out with the same types of explanations that Piaget got.

These controversial results led to another controversy which considered culture as one of the factors. When children in America and other countries did not give explanations of the same type that Piaget's subjects gave, the hypothesis was that Piaget's subjects came from a culture that was used to more magical and animistic thinking and that difference in culture was the reason for a large number of such explanations. The generalization from this was that children coming from Oriental culture would be still more magical and animistic in their explanations. Huang (10) a Chinese psychologist took up this point and arranged a series of experiments with Chinese children and adults. In one of these experiments he experimented with strange phenomena. He chose phenomena that were equally strange to the children and adults. He found that the explanations given by children did not differ at all from those given by adults except that the adults showed the advantage of their experience. He had conducted the same experiment with American children, so he could compare the explanations given by American children with those of Chinese children. His conclusion was that Chinese children were no more magical than American children, thus disproving the hypothesis that culture is an influence on the explanations of physical causality.

Another experiment to test Piaget's types and the culture bias on these explanations was designed by Pasricha and Suri (16) in India. They took their sample from the Pre-school group, with the hypothesis that if the children's explanations are different from those of adults the younger children will show a greater difference. Also that if culture is a component then the younger children, who are already magical in their explanations, will give more magical explanations. The method used by them was also standardized; definite questions were framed about each phenomenon included in the demonstration and they were asked in the same set language. The demonstration was individual in nature. Their findings were significant in the sense that these children aged three, four and five years did not show any magical explanations while a total sample of 209 children gave only nine animistic explanations. This experiment tends to refute the thesis that the children from Oriental cultures, where there is more belief in superstition and magic, will indulge in magical thinking more frequently than children brought up in Western cultures. The explanations given by these children were matter of fact and true to experience. They built their explanations from the past experience and the situations that they had encountered in their daily life.

Though the children in this study gave better and more coherent explanations at older age levels, the types of explanations showed frequent over-lapping. Some of the younger children gave same types of explanations that some of the older ones gave. This over-lapping in the types of explanation will undermine Piaget's contention that the development of the concept of physical causality

takes place in stages. The over-lapping goes to prove that a continuum of development is much more coherent. In case the development did take place in stages, then the types of explanation from age to age would have been exclusive and hierarchical in terms of clarity and logic.

Piaget was also emphatic about the animistic thought of children. He put forth the theory that animistic concept also develops in stages which are four and distinct from one another. The first stage spreads over four to six years and at this time the child believes every thing to be alive. That is why in case of a fall the child feels revenged when the earth is hit hard. The second stage covers six to seven years, when everything that moves is considered as alive by children. In the third stage the things that move by themselves are attributed life. This stage spreads over eight to ten years of age. In the fourth stage which appears at about eleven years of age, the child attributes life only to plants, and animals.

Russell (18, 19, 20, 21) spent a great deal of his time in studying the concept of animism in children. He confirmed the four developmental stages given by Piaget and stated that children passed sequentially through the four stages. However, Russell was not able to correlate the age ranges with these stages. His findings indicated that the progression through these four stages of animism was more or less independent of sex, socioeconomic status and geographical location.

Huang and Lee (11) took a group of children younger in age range to the ones taken by Russell. They used different experimental techniques from the ones used by Russell and came to the conclusion that there was only a slight tendency on the part of children to attribute life to inanimate objects. Further, even when life was attributed they found very little tendency to give the object anthropomorphic traits of feeling pain, wanting things and general "knowledge". They state, "The facts prove that, when the child describes a thing as alive, he is in no way indiscriminately committed to ascribe to it the anthropomorphic characteristics."

Most of the psychologists, today, prefer the idea of "evolution of concepts" or "growth of concepts" to the concept of animism as used by Piaget. The main reason for this preference is the fact that the concept of animism has acquired many rigid connotations from Piaget's theory. It is now agreed that children's concepts become more like those of adults as a result of their living in a particular social set-up and the interaction with the members of that set-up. Similarly, maturation and learning play their important roles in the development of different concepts. The growth of these concepts is gradual and systematic just like the growth of other mental aspects, and the concept development is closely related with other aspects of mental life. The defect with Piaget's classification is that it is adult-

oriented, that is, it is a classification made according to the thinking and reasoning of an adult and not from the point of view of a child. In view of the above discussion such an adult-oriented classification sounds fruitless and misleading.

Personal Social Concepts

Personal social concepts are gaining importance in psychological researches because they are closely related to and influence our social perceptions. Each one of us is perceiving the people around him. We are perceiving our friends, neighbours, classmates as well as people of different communities. The last one of these has lent great importance to research on social concepts. Psychologists are aware of the tension caused by our perception of different racial and religious groups with the result that they have spent their time on the study of how social concepts come into existence and how they develop. Little children have been given dolls looking like members of different racial groups and their play has been observed. Children of different ages have been studied under this experimental situation. All of these experiments have concluded that younger children do not show any signs of differential social perception from one doll to another but with age this difference becomes obvious. The reason for this age difference is concluded to be the association with adults who have mastered the social concept and who pass it on to children, so that it is a purely learned concept.

Children have further shown that they give their comments on social phenomena without understanding their exact meaning. This is a further proof of the heavy loading of attitude learning in the social concept. The same phenomenon has been studied in one of the experiments where the members of one community were asked to give their reaction to being served by the members of another community (considered lower in social status). Their verbal responses were heavily charged with individual social perception that they had of that particular community but when they were unknowingly served by those people their behaviour did not show any change. They did not even notice the fact, but again if pointed out they were very antagonistic to it, and expressed their negative social perception. Thus we conclude that social concept is very much a function of our learning and as a result it appears late among children and is preceded by a stage where the meaning of certain conceptions is not understood, still an expression in favour of them or against is very obvious.

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Everyone possesses certain interests due to which he likes certain activities or prefers to spend his leisure hours in a certain manner. He also reacts in characteristic ways to social, political or religious issues, has some ideals or life-goals which he cherishes, and displays some concept of right and wrong, virtue and vice, good and evil. No one is born with any of these predispositions. In course of his life experience, they develop and make the individual selectively oriented towards certain aspects of the environment. Though it may not be very accurate to equate these built-in predispositions with personality, it can be said that they provide an important source of *dynamics* in our behaviour, and thereby occupy a significant place as a motivational variable. What a person is interested in would be pursued even without external pressure; and a person's attitude is likely to find expression in his behaviour if there are no deterrents or obstacles in the way. Moreover, pursuit of one's interest is always satisfying. As such, there is often a close association between interest and job satisfaction.

These predispositions bring order to individual's reactions to the environment. Instead of reacting indiscriminately to every stimulus that impinges upon him, he reacts to limited groups of stimuli and in a manner that is characteristic of him. He exhibits an amount of personal autonomy or self-regulation which circumscribes his reactions and puts them into an orderly picture. As James (p. 402) has very aptly said, "...without selective interest, experience is an utter chaos. Interest alone gives the accent and emphasis, light and shade, background and foreground intelligible perspective, in a word". Thus, a person known to be interested in physics or chemistry is likely to be more receptive to things of the scientific world than to poets or writers; or, a person with pro-Congress attitude is likely to view the actions of the Congress Government in a more favourable light than a person known for his anti-Congress tendencies.

Moreover, these predispositions are significant because they determine the social, political and other influences to which the individual voluntarily exposes himself. The type of amusement or hobbies which an individual seeks largely depends upon what he is interested in, and it in turn influences the individual. Radio programmes and films are not merely entertainment, they profoundly mould individual's beliefs, attitudes, values and overt behaviour.

Attitudes have been found to affect perception, judgement and other cognitive processes of the individual as well as selectively to orient the person to the sort of propaganda he will voluntarily believe and expose himself to. Thus, the study of the development of interests and attitudes will illustrate how cultural, biological, and intellectual influences affect behaviour (26, p. 190).

There is, however, a distinction between interests and attitudes. The former are always positively directed and are usually more active than passive. The person usually likes the things in which he is interested, or the hobbies he pursues. And the thing that interests is also actively sought. "An interest is accompanied by pleasant feeling and by a dynamic tendency to seek the object or do something about it (47, p. 9). Interests are acquired in early childhood or may develop even later. They are usually developed in relation to and remain allied to, more basic motives of man.

Attitudes, on the other hand, may be positively or negatively directed. Thus the individual is either favourably or unfavourably oriented towards certain social institutions, nation, caste, race or a political party. They are also broader in scope and comparatively more passive. The person may possess attitudes but may do nothing about them, while this is less likely in the case of interests. However, attitudes come into play as determining tendencies the moment he is called upon to express his views, act, or make a decision. The attitudes that are negative and cause the individual to view people of other nations, races, castes or classes in an unfavourable light and to discriminate against them are designated as social prejudices. Their nature is similar to other attitudes and are acquired by the individual in course of his development.

Many of the attitudes have as their object the ego or the self of the individual. He also develops attitudes towards the concepts of right and wrong, virtue and vice and other moral values. These are incorporated into his ego, and he develops a characteristic tendency to act honestly, with sincerity, courage or perseverance. The constellation of such ego-attitudes and traits developed by the individual is often referred to as *character*. As defined by English and English character is "an integrated system of traits or behaviour tendencies that enables one to react, despite obstacles, in a relatively constant way in relation to mores and moral issues." (11)

Interests, attitudes and character are not inborn, but are acquired by the individual in course of his development. In the process, both the factors of maturation and learning operate. As learning enters into the picture, it is obvious that persons reared in different cultures will exhibit certain distinct patterns of interests, attitudes and the type of character which is considered *normal* or *typical*. However, extensive studies on the subject have not been made in our country. Most of the information on them has come from investigations done in the West. Therefore, the pattern of development presented below

ould be taken with due reservation. They provide the general trend and the mechanism of development. They do not provide a picture of the development of interests, attitudes and character of the average Indian true in all its details.

DEVELOPMENT OF INTEREST

The pattern of interests undergoes a vast change with age. In the young children, changes are rapid. In later stages, interests become more stable. Buhler (5) has made an analysis of the amount of time spent in various activities by the neonate. At birth, working activities other than taking food, negative reaction and impulsive involuntary movement occupy very little time. He spends about 15 to 20 hours in sleep or dozing. By his first year, it is reduced to about twelve. Active manipulation of the environment (exploration and experimentation) does not begin until he is about two months old but occupies about a third of his entire day by the time he is about a year old. Around two or three months he begins to explore his own body, and finds satisfaction in playing with his own arms, legs and fingers. As his motor coordinations develop, he begins to reach out and grasp objects of the environment, and there is the beginning of outward direction of his interests. Around his first year, he begins to engage in activities that could be called "play". Before that his reaction to toys are more exploratory in character. Gradually interests in toys, dolls, blocks and games develop. In later childhood and adolescence, they are replaced by all-absorbing interests of games and sports.

Dimock (8) interviewed groups of 12 to 16-year old boys and ascertained how they spent their time. Compared with younger groups, the older boys spend 4-5 hours more outside home and a little less in sleep and eating.

Pressey and Pressey (40) studied the changes in interests in over 4,000 boys and girls from the sixth grade to the college. The most striking result was the trend toward decline of certain interests and the emergence of others. As interest in clothes dancing, and social affairs increased with age, interest in gross motor activities like riding, cycling, skating declined. Another feature of the development was its gradualness and continuity. No one age-group was distinct from the adjoining age groups. Interests in kites, marbles, dolls and mechanical toys were discarded but gradually. In general, the developmental picture was similar in both the sexes, although girls were found to be less active, and due to their earlier physical maturation evinced social-sexual interests a little earlier.

The study of play activities in boys and girls of 5, 10, 15 and 20 years by Lehman and Witty (28) revealed much greater outdoor interests in boys and indoor interests in girls. An analysis of hobbies and leisure-activities of 120 male and female Indian college

students by Sinha and Niwas (46) revealed that only a limited range of activities were mentioned. Cinema was about the most popular activity being mentioned by roughly two-thirds of boys and girls. Boys had mentioned photography most frequently though it occupied a very low place among the girls. Reading of novels or magazines was not popular with either sex. Hardly 10 per cent of persons interviewed mentioned it as their leisure-activity. Except for cinema, the pattern of leisure activities was different in boys and girls. Photography, stamp collecting, outdoor games, and shooting were more popular pastimes in boys. The girls spent their leisure mostly in pursuits having bearing on household work like sewing and cooking. Cultivation of the fine arts like music and dancing was mentioned by about one-third of the girls.

Collecting Interest :

Young children display keen interest in collecting various objects. It lends prestige as well as provides souvenirs. It is often jokingly said that the age of a boy can be told simply by examining the contents of his pocket at any given time. Younger children of about nine or ten are likely to have a variety of objects in their pockets. An older boy has fewer and objects of different sorts.

Whitley's study (57) on several thousand children from seven to eighteen indicated that collecting interests were strongest in children between ages of ten to thirteen. Objects frequently collected by boys were coupons, coins, stamps, etc. The interest of girls centred around paper dolls, letters received, beads, small pictures, etc. Older boys and girls exhibited quite a different pattern. Eighteen-year-old boys collected fewer things and showed preferences for theatre-programmes, letters, photographs, badges and old magazines. The girl of the same age collected letters received, old magazines, sample of school work, pictures and photographs. There was also great deal of individual and regional differences in collection interest. Rural children were found to collect twice as many things as their urban counterparts (58). Asked about reasons for collecting, the younger ones indicated play or objects to look at as the cause, while older children were more utilitarian.

Reading Interest :

In studies made in the West, reading "just for fun" has been listed as among the three favourite activities by 16 and 17-year age-groups than by any other group. On the average, nine hours per week is spent in side-readings (21). Due to low literacy level, poverty and lack of facilities for obtaining children's books and magazines, reading habit is not so well-developed in Indian children. Reading of books and magazines as favourite leisure activity had been mentioned by hardly 13 per cent of college-going boys and girls (46).

Children display interest in a great variety of reading material. Interest in comics is of recent growth in our country, especially in boys and girls from public and English schools. The author while interviewing about 150 boys and girls of 9 to 12 years found that such children not only showed greater variety of general interests but also a wider range of reading interests than children from ordinary schools. Younger children read mainly for fun and liked fiction, especially adventure tales, fairy tales, travel books with pictures, sports page and children's corner and cartoons in newspapers. Younger children were attracted by brightly illustrated publications, make-belief and animal stories. Stories of demons, giants, gods and goddesses, from Mahabharata and Ramayana and *pauranic* stories attract younger children in Indian homes. By 8 or 9 years, reading interest begins to turn more realistic though animal and fairy tales persist. By about 10, sex difference begins to appear. Boys develop liking for mystery, travels and adventure while for girls, romance, realistic novels, and stories of school and home life have special appeal. Both sexes develop interest in biographies and stories of legendary heroes have special appeal (Terman and Lima, 50). The age 12-13 years is often regarded as one of reading-craze. With age, reading "just for fun" declines sharply. There is sharp rise in social activities and home work and the individual tends to become more purposive. Reading for acquiring knowledge increases during late teens. The reading in adolescent is highly selective. Whereas late childhood is characterized by reading anything that may be available, the adolescent begins to pick and choose with narrowed and channelized interests. By 16, the individual usually develops his specialised reading interest.

Interest in Cinema :

Studies made in the West as well as in India have shown cinema to be one of the most popular interests. It plays an important role in the recreational life of the children, adolescent and adults (Sinha 45). No less than two-thirds of college boys and girls studied indicated cinema as the main form of leisure-time activity (Sinha and Niwas, 46). Even younger children, aged 5 to 8 years, go to cinema occasionally. By preadolescence or adolescence, the visit becomes more frequent. An American estimate shows that 70 per cent of young people between 8 and 18 years go once a week, about 25 per cent twice or more often (Sinha, 45). A general sample of children studied in England revealed that 52 per cent of school children were cinema goers (42). Many of them had formed the habit of visiting once a week, and a considerable percentage even oftener.

Mitchell (34) made a study of the types of films preferred by elementary and high school children in U. S. A. Westerns, adventures and comedies headed the list for boys. In the girls, west-

erns still occupied the first place though its frequency was much lower than in boys. Comedy and romance occupied the next two places. In both the groups with increasing age there was a decrease in interest with regard to the westerns and increase in historical pictures and romances. The pattern of preference thus changes in older children and sex difference also begins to appear. Films of an educational nature or tragedies have little appeal for either younger or older children. Similar studies have not been made in India. But it can be expected that *pauranic* and religious pictures would be added to the list, especially for children from rural areas. It has also been observed that among age-group 5-8, animated cartoons and comedies are very popular, especially if a child actor or an animal performs the leading role.

The precise influence of films on children is still a matter of dispute. It is, however, generally agreed that films have a profound influence in moulding the attitude and behaviour. Some moralists have felt so alarmed at its baneful impact on children's "character" that they have suggested, quite seriously, the shutting off of cinema to juvenile audience. Though no one will doubt the influence of cinema, it is difficult to find indisputable and clearcut evidence for such outright condemnation. Because of certain special characteristics of the situation in which the film is witnessed, the possibility of its influence on the audience is very great. Simultaneous presentation of images to both eyes and ears is a factor. In the darkened hall there is greater scope for imagination to have a free play. The spectator assumes an attitude of passivity and receptiveness. He readily accepts the images presented to him, and identifies himself with persons, events or actions depicted on the screen. He experiences joy, sorrow, elation and depression as if he himself had been one of the active participants. He temporarily "escapes" from the reality and soon returns, but not without being influenced in the process.

All these factors together with the *anonymity* of the spectator combine to heighten the suggestibility of the individual and what is presented on the screen is readily and uncritically accepted. But social scientists are not in agreement as to the extent of its influence. Some hold that its influence though profound is only transitory and has little effect on the long-term attitudes and beliefs. Its effect on children's sleep and emotion is undeniable, but it is to be doubted if it has a long range and lasting impact on behaviour. Exposure to films have produced measurable changes in attitudes which have persisted for months (Peterson and Thurstone, 38). It is also observed that while exposure to a single picture may not produce significant physical or psychological changes, the effect of a series of pictures may be profound on the outlook and attitude (Hovland 18). In other words, films have been found to have a "cumulative effect". Though a child may not turn a thief, pick-pocket or a gangster simply by seeing films, if other influences are

not there, continued exposure to them does undermine his social sense and may from its beginning vitiate his training for citizenship. The report of the Committee on children and the cinema appointed in U.K. under Wheare concludes, "whatever the truth about the particular imitation of 'gangster' and 'crook' types, the evidence of general imitation is fairly strong—not so much the imitation of acts as the assimilation of habits and sentiments, attitudes, manners and styles, all of which have some bearing on social behaviour; methods and idioms of speech, conventions of courtesy, styles of dressing and moving — are all affected by the screen. These matters are bound to affect children not only in their manners but also in their ideals and ambitions" (42).

It is, therefore, highly probable that children's outlook, ideals, manners and character get "cumulatively" affected by films. It points to the need of banning their attendance to certain types of films and need for specially designed juvenile films which while entertaining enough will not expose them to adverse influences.

Interest in Radio :

Like the film, radio has become a favourite leisure-time activity. It is particularly so in economically better homes where radio is a common household means of entertainment. With the increasing economic prosperity and manufacture of cheap sets, it is fast entering poorer homes and rural areas where group-listening to radio programme is becoming increasingly common. The pattern of preference of the types of programme from a developmental angle is not available. Even in the West, research in radio interests has not been very systematic. It is, however, felt that the preference will follow the general interest pattern. Investigating the interest in various types of radio programme in 2500 American children from the 5th to the 12th grade, Brown (4) found mystery plays most popular with youngsters. Comic skits and dramatic plays were equally enjoyed by both the sexes. Preference for mystery plays tended to decline with age, specially in girls, but interest in comic skits and dramas persisted. With age, there was also growing interest in dance music, popular songs and "hits", which reflected increasing interest in social activities of the adolescent. Interest in political events, news or radio newsreel, and classical music was negligible in lower age-groups but tend to rise a little during adolescent years.

Interest in Conversation :

Analysis of what children talk among themselves and the themes in their letters to their parents and friends have revealed their likes, dislikes and interests. Dawson (9) studied the time sample of spontaneous conversation of young children in the 3rd to the 6th grade made by their teachers. The first five general topics in order of frequency were games and sports, personal experiences, trips, pets

and tricks, and family and friends. Younger children exhibit many specific interests while older ones concentrated on few topics. With age, as outside interests begun to emerge, interest in family waned. Among adolescents, conversational interest centred largely on personal and interpersonal relations. Gradually it focussed more on world affairs and on academic and vocational matters. In another study (Fleege, 13) conversational interest in boys from the 9th grade onwards was found to centre around sports, girls, social activities, in sex and dirty jokes. Later on, there was a great upsurge in topics concerning jobs, money and future vocation.

General Trends in Interest Development

Certain main trends in the development of interests are to be observed. With increasing age there is the emergence of sex and social interests. Late adolescence and early twenties can be viewed as the age of vigorous physique and strong sex-social interests. Thereafter they begin to wane gradually, the trend is reversed and there is the growth of non-competitive, sedentary and relatively solitary activities. After 25, vigorous physical activities and active games tend to give place to pursuits like observing birds, flower and vegetable gardening, reading and visiting museums. Then, again, social activities like card-games and parties decline after middle age and are replaced by preferences for more "non-social" activities like reading books, chatting with a few intimate friends rather than going to parties, and spending more time at home than was done before. With advancing years, as more experience is gathered, a trend towards greater complexity of interests is also observed. As Kuhlén (26) has put it, "At young ages, activities are engaged more for their own sake and tend to be simple in the demands made upon the individual and relatively simple in interpretation; at older ages, the activity itself may be secondary, and its real meaning more difficult to discover".

In view of regular and consistent pattern of interest changes during preadolescent years, Furfey (14), and Pressey and Pressey (40) have suggested the use of expressed interests as a means for evaluating personality developments. Thus, "Interest-Attitude Test" has been developed. On the basis of choices made between pairs of interests, a "developmental age" is calculated (Furfey, 1931). One is confronted with choice between going to cinema or to the zoo, between having party handkerchiefs or ice-cream, and so on. It is said that a boy who enjoys outdoor games like football or cricket has a higher developmental age than one who prefers to make mud-pie; the girl who enjoys dancing is more mature than the one who prefers to play with dolls. Similarly, the "Interest-Attitude Test" of Pressey and Pressey gives an idea of the "emotional age" based on the pattern of interests, disapprovals, worries and admirations revealed on the test.

However, it cannot be said that these tests provide a satisfactory or exact measure of personality, but they are useful to indicate growth changes in the individual.

The rate of change of general interest pattern over childhood, adolescence and adulthood is also important. The phenomenon has not been adequately studied. Strong's study (48) of changes between 15 to 25, assuming 25 as the age of full maturity, has shown that of the total changes between those ages, the first third occurred in the *one year* between 15.5 and 16.5, the next third occurred in the *two years* between 16.5 and 18.5 and the last third required the *six and a half years* between 18.5 and 25 years. Thus, interest changes are very rapid during the middle teens, but gradually slow down during the late teens and in early twenties. "This slowing down of change suggests that a level of maturity is reached that might provide a reasonably stable basis for estimating interest areas" (Kuhlen, 26). Thorndike (53) has also pointed to the stability of adult interest. Assuming 100 per cent as the total changes between 25 to 55 years, 50 per cent is said to occur between 25 to 35, roughly 20 per cent in the next ten years, and about 30 per cent between 45 to 55. There are few or no changes thereafter.

Factors in Interest Development :

What a person likes to do and is interested in is in part determined by age, sex, physical abilities, intelligence and socio-cultural background. The studies discussed so far have clearly brought out the operation of age. Other factors will now be discussed.

Sex Differences : Most studies of the development of interests have noted marked sex differences. As physical maturity comes in girls before it does in boys, they show earlier a preference for dancing and other social activities and little liking for vigorous physical exercises. Cultural factors also play a part. In most cultures, girls are expected to be more socially inclined and boys physically more active and oriented towards vocational interests. Sinha and Niwas (46) observed distinct sex differences for the pattern of preferred hobbies and leisure-activities. Cinema was the only common preference. A review of studies clearly indicates that factors associated with sex differences far outweigh those associated with other types of differences like age, intelligence or culture. Kuhlen (25), for example, in his study of interests and attitudes of adolescents of different racial groups in Hawaii observed the Japanese girls to have interests more like that of white girls in United States than like the opposite sex of their own race. Comparisons indicated sex differences in interests to be even greater than racial differences.

Termarz and Miles (51) have devised a masculinity-femininity test (M-F Test) designed to gauge the extent to which individuals are "typically" masculine or feminine in their interests and attitudes.

It has roughly 500 items pertaining to word association, inkblot association, information, opinion and interests, and emotional and ethical responses. Comparison of interests of boys and girls of different grades on the test demonstrated a clear divergence between the sexes by early adolescence. Males became more masculine in their interests by the 11th grade, and then in subsequent years they steadily swerved towards the feminine end of the scale. On the other hand, female interests tended towards masculinity until college-years and then became more feminine-like.

In every culture there are certain activities and interests regarded as characteristically "masculine" or "feminine", and there is consistent sex difference regarding preference for them. However, there is a distinct trend, especially in girls in western and sophisticated Indian societies to adopt "tom-boyish" role. As such, it is not rare to find many college-girls putting on blue-jeans and adopting "boyish" appearance. More girls have been observed to participate in boy's activities than boys in girls' activities (Lazar, 27).

Physical Development : The type of motor and manipulative activities from infancy onwards is clearly correlated with the level of physical development. Of all the things a person has opportunity to do, he will usually select those he is capable of doing. This relationship is most evident in early infancy and old age. The child plays with toys only when his muscular coordination has developed; he shows interest in tricycle when locomotive activities have fairly matured. Spurt in the growth of skeletomuscular systems around puberty is associated with strenuous sports. Older individuals, with declining physical strength, tend to prefer sedentary activities.

Intelligence and Interest : The level of an individual's intelligence influences his interest. The intelligent child or adult is capable of more complex activities and of pursuing complicated hobbies and interests. People of higher intelligence find pleasure in complex activities. Put on routine jobs, dissatisfaction is evidenced and they tend to quit (Viteles, 56). Lewis and McGhee (29) compared the interests of mentally superior and mentally retarded children. Bright children showed greater diversification of interests. Studies of reading interests have brought out this relationship very clearly (Lazar, 27; Terman, 94; Thorndike, 45). Thorndike showed that although the interests of bright and mentally slower children were quite similar, the similarity was much greater if the bright ones were compared with slow ones of about two years older in age. Thus, bright children showed a maximum interest in realistic animal stories between the ages 9 and 11 while the duller ones between 12 and 14. Reading of romances reached its peak after 14 in the dull group while around 12 in the bright ones. At any age, bright children read markedly more than dull ones, and their reading was of superior quality and more realistic. Terman also observed more frequent participation in solitary activities on the part of bright and gifted

children. Higher intelligence imparted them with greater capacity for self-amusement and skill in reading and dealing with things abstract.

Sociocultural and Environmental Factors :

The environment provides opportunities for various activities in which the individual can engage himself. As such, it is but natural to expect individuals coming from differing environments to exhibit different patterns of interests. In our country, urban boys more commonly show interests in stamp collecting or in coins or in cricket than their rural counterparts. Interviewing over a hundred boys and girls between 9 and 12 for scholarships, the author observed the urban children as having a greater variety of interests. The study of Sinha and Niwas (46) also indicated that social position of the family played a large part in moulding interests in future career in both college boys and girls. Economic status of the family was also a factor. As Kuhlen (26, p. 221) has put it, "while biological maturation lies behind awakened sex interest, the specific ways in which this interest is expressed will be determined by cultural factors and may range from "petting", dancing, swimming, and tennis parties in the accepted American culture to overt sexual relations in certain primitive cultures." The forms which play and interests assume are governed in part by what others are doing, or what is permitted or conventional in the culture, and by physical features of the environment like geography, presence or absence of other people, availability of materials, and by facilities for expression. Lehman and Witty (28) found distinct patterns of interest in rural and urban children. Going to the cinema was less frequent in rural children. Plays in rural areas were, by force of circumstances, more solitary like hunting, hiking and fishing. There was also greater participation in solitary activities, like "just singing" or whistling, while urban children went more frequently to cinema. The difference was surely due to opportunities for expression available for these activities in the two surroundings.

Cressman's study (7) throws light on the role of socioeconomic status on week-end activities. Economic level affected interests by way of availability of funds for the pursuit of various interests and the degree of plentifulness of play equipment. In a function in public schools, where in our country a large number of children from more well-to-do families study, many are found with cameras. They possess stamp albums and buy comics. While in ordinary schools, such interests are rare because the parents of lower economic status cannot afford to encourage such expensive hobbies in their children.

Culture affects interests in yet another way. It prescribes roles for various ages, and recommends taboos and disapprovals. There is a norm for what children of certain ages ought to do. Children tend

to conform to the behaviour expected of them. Thus, girls *normally* like dolls and boys the mechanical gadgets and ball games, though there is hardly any biological basis for such preferences. These are culturally reinforced. From an early age, boys receive as presents from their elders mechanical toys, soldiers, cowboys and trains while girls get doll houses, nursing kits, cooking set and the like. A boy who is found to play with the latter is made fun of. Thus, as they grow, sex differences get pronounced. Boys develop masculine interests and are taken to football and other outdoor games by their parents, while girls stay at home, help in cooking, sewing, housework and learn to be "lady-like" in their activities and interests.

DEVELOPMENT OF ATTITUDES, IDEALS AND CHARACTER

G. W. Allport (1) has defined an attitude as "a mental or neural state of readiness, organised through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related." Like interests, attitudes are learned in course of life-experience which make the individual behave in characteristic ways towards persons, objects or issues to which they are related. They are usually identified by the specific objects to which they are referred viz., attitude towards the Congress, Hinduism, God, the Chinese and so on. Further, certain persons develop consistent ways of reacting to a broad class of objects and depending upon the nature of their reactions, they are characterized as possessing "liberal", "conservative", "tolerant", or "nationalistic" attitudes.

Attitudes are tinged with emotion, and are very personal and complex in character. As Sherif and Cantril (43) have put it, "Most attitudes have the characteristic of being part of me". They are "towards *my* parents, *my* school, *my* gang, *my* church, *my* nation, *my* boss, *my* friends, towards *my* friend's rival, *my* father's competitor, *my* country's enemy, and so on." Attitudes are also uniquely organised in each person. Though certain attitudes may be held by many, each usually gives his own slant in expressing them. Attitudes and their organisation are the products of individual's own reactions to his own experiences.

Like interests, attitudes influence the behaviour of the individual by making him selectively oriented towards certain objects and issues. Depending upon the nature of his attitudes, he reacts favourably or unfavourably.

No one is born with any attitudes. They are learned in a culture in course of individual development. The kind of environment in which he grows has an indelible impact on the attitudes he possesses. Information about the views and values prevalent in a subculture is, therefore, essential to their understanding. Soon after

his birth the child is confronted with many attitudes and values current in his social-surrounding. As he grows, he begins to react to these. First they appear on the stimulus side and he learns from his parents, elders and peers how to react to them. Throughout his childhood and adolescence, he gradually learns the accepted codes from parents and other authorities around him. He is rewarded and praised if he does the right, and punished or ridiculed for deviations and transgressions. In the beginning he learns the ideas of good or bad, right or wrong, and virtue or vice in relation to specific situations. He learns that it is bad *only* to beat his cousin. Later on, he is able to generalise so that he refrains from beating not only his cousin but also other children. Similarly, he learns not to take his brother's toys but also those of other children. Thus, these values are picked up as he grows, and he develops his characteristic ways of reacting towards various situations in course of his socialisation. These attitudes and values are at first external to him. Gradually he interiorizes and incorporates them into his developing ego. There is a transition from external to internal authority. Originally it is the mother or father who has to tell Mohan not to tell a lie, or to steal other children's toys. Later on, Mohan will not tell a lie or steal of his own accord. Thus, a whole set of ego-attitudes, collectively called *conscience*, emerges which regulates his behaviour. What previously required coercion or external pressure has now become an integral part of his ego-functioning. Consciously or unconsciously, the norm that "thou shalt not lie or steal" has become an effective part of him, and normally he does not lie or steal even though nobody may detect him or in spite of its being advantageous to him. In a similar manner, other moral precepts develop and form part of his ego. In this way the individual develops a *character*. He will not commit theft or adultery not simply because he is deterred by external fear but because it will injure his *self-concept*. It will be below his dignity to do anything which he considers dishonourable.

When attitudes relate to standards of conduct, it may be designated as ethical or moral values. Attitudes may also be related to political institutions and issues and are called political attitudes. Similarly, attitudes relating to ethnic or social groups, displayed in the form of dislike, discrimination or tension are often called social prejudice. The individual in course of his development comes to possess many kinds of attitudes. But whatever may be their nature, the mechanism of their development is very similar.

As far as moral attitudes and values are concerned, studies have indicated that regard for property rights of others to be the first moral value to appear in American children (Eberhart, 10). By the sixth year, stealing was regarded as wrong. McGrath (31) observed that such children diagnosed theft situations as easily as the adults. Thompson (52) asking some thousand children about things they would praise or disapprove in others found that the

"basic values" were inculcated by the eleventh year. Most praiseworthy virtues according to their frequency were honesty, politeness, kindness, cooperation, friendliness, absence of bragging, cleanliness, generosity, and proficiency in social skills. Traits considered blameworthy included dishonesty, a "bad" character, carelessness, and disloyalty. The ratings for these changed little with increasing age of the child, nor was there any marked sex differences. Interviewing about 100 children of 9 to 12 years and asking them as to what they would regard as "bad" and "good" in others, the author observed that stealing, lying, beating others not obeying the parents or teachers, killing animals, and dirtiness were frequently listed as vices, while honesty, obeying their teachers, *ahimsa* and kindness were frequently mentioned as positive virtues. Thus, by about the ninth year, the basic virtues were organised in Indian children. Making a study of the activities disapproved, Pressey and Robinson (41) noted that smoking, playing cards, dancing, kissing, and using lipsticks were strongly condemned by younger children. Their disapproval was much less in older children and those of college-going age. Moreover, conceit, bribery and immodesty were condemned more severely by older students. Thus, though certain moral values are acquired early, others continue to develop and the existing ones undergo changes through adolescence. With advancing age, absolute criterion for moral judgment tends to be adopted, and the judgments are more severe. Anderson and Dvorak (2) developed a questionnaire of a number of behaviour situations dealing with moral issues. College students, parents and grandparents were required to check one of the four choices for alternative responses which indicated whether they had adopted, (1) absolute standard of right or wrong, (2) a standard set by public opinion, (3) an aesthetic standard, or (4) a standard set by intelligent or prudent judgment. It was observed that students tended to use intelligent and aesthetic standards, grandparents judged according to absolute criteria of right and wrong, while the parents tended to be between these extremes.

The study of Jones (22) also supports the findings that older people are more severe in their moral judgment. Asking teachers of different age-groups to classify moral situations as either right or wrong or excusable, it was found that older teachers tended to use absolute standards while younger ones favoured compromise.

The Indian children interviewed by the author when asked how they knew that certain actions like stealing or lying were bad, frequently replied that they had been told so by parents or teachers or had read so in books. Thus, the family, the teacher and others held in esteem or authority greatly influence the inculcation of the moral attitudes. This is generally done by rewarding of behaviour that conform to the accepted moral code, punishing the transgressions and lapses, and by narrating the tales of exemplary behaviour of certain legendary and *pauranic* heroes and by praising their deeds.

and holding them as "models" before the growing child. The children usually like to listen to such stories often narrated by parents or grandparents, adopted the lives of some heroes as ideals and learn from them what to approve and condemn in their own conduct as well as in those of others. 9

Studies on attitudes have clearly demonstrated the influence of family on their formation and development. Family is the first and probably the foremost training ground of attitudes and moral values. It is there that the individual learns his first lessons about what groups to disapprove, what to consider right or wrong, and what to regard as virtue or vice. Racial prejudice, for example, does not show itself till the 5th grade (Moreno, 35). Some investigators have observed it even in kindergarten children (Horowitz, 17). Looking into its origin, it was found that mother and father, sometimes inadvertently or even consciously, hinted to their wards not to play with children of coloured people. It is a matter of common observation that young children from high castes unhesitatingly and freely play with *any* child. Gradually, they learn from their superiors and peers to avoid those of certain castes because they are not "clean", "good" or "well-behaved".

Newcomb and Svehla (37) have studied parent-child correlations in different occupational levels and in various age-groups. Similarity between parents and their offsprings was observed on many attitudes. It was greatest at the lowest economic levels. The results have been explained on the basis of similarity of influence to which the children and parents were exposed and the role of parents in the inculcation of attitudes. This influence was greatest in earlier years. With increasing age of the child, similarity to parents' attitudes tended to decrease. Greater diversity of influences operating on older children and on adolescents were clearly responsible for divergence in their attitudes.

Influence of socioeconomic factors on attitude development is also very great. Studying the political attitudes of different "social classes", Centres (6) found "liberal" and "conservative" views to vary with the cultural level. Individuals from the upper occupational groups like business owners, managers and professional men were predominantly conservative whereas among persons categorized as white-collar, skilled, or semi-skilled "workers", much larger proportion held radical views. Eysenck (12) has also observed the significant influence of social class status on socio-political opinions.

As attitudes and moral values develop in a cultural matrix, there is always the questions of *cultural relativity*. Researches of ethnologists (Benedict, 3; Mead, 32) have convincingly demonstrated how different cultural groups cherish different moral values and norms of conduct which may shock the strict 'moralists' of our culture.

Degree of contact with members of groups has little to do with racial or social attitudes. Remarkable consistency in stereotypes have been found among students irrespective of the regions from which they came. Students assigned "typical traits" to ten ethnic groups with great consistency even in case of groups which were personally unknown to them (Katz and Braly, 23). Sheer amount of contact with Negroes had no observable effect on the amount of prejudice displayed towards them (Horowitz, 17). Children from areas with little contact with Negroes, or from mixed schools in the North, or from Southern States gave remarkably similar pictures of prejudice. The study also showed that children formed their attitudes towards various groups from the statements of grown-ups prescribing what 'good' boys or girls do. The importance of parental influence can also be judged from the fact that children who showed no apparent prejudice against Negroes came from the group whose parents were Communists and as such had rejected the prevailing social norms of the community.

Membership of a group also helps the formation of individual attitudes. When he joins various groups of friends, clubs, teams or political parties, he identifies himself with them and moulds his attitudes in relation to the prevailing norms of the group concerned. In fact, attitude formation, its development and change cannot be understood without its relation to the group matrix. The standard people set for themselves are determined largely with reference to groups to which they related themselves (Hyman, 19) and "within each status dimension an individual's judgment of his status shifts when reference groups are changed." Newcomb's famous longitudinal study of change in social attitudes in Bennington College students demonstrated that change or maintenance of attitude was to a large extent a function of the reference group to which the individual related himself (Newcomb, 36).

Attitudes are not static, rigid entities. They change radically under certain conditions or even breakdown entirely. For example, industrialization is found to liberalise many of our social attitudes including that of caste distinctions (Prasad, 39). Impact of events may also bring about shifts. Meenes' study of stereotypes in 1935 and again in 1942 showed significant shifts with regard to Germans, Japanese and Chinese, while towards other nations, they remained relatively constant. Due to World War II and the German and Japanese being hostile powers, many uncomplimentary traits were ascribed to them which were not there earlier (Meenes, 33). Kuhlen's study of changes in attitudes in relation to various war events showed a sudden rise in the popularity of Great Britain after Dunkirk, a spurt in favourable attitude towards Russia after its entry on the side of the Allies (Kuhlen, 42). Strong impact of important events in attitude changes is also demonstrated in the study of stereotypes of Indian students (Sinha and Upadhyaya, 44) towards

various ethnic groups. Stereotypes were determined in February, 1959, when Indo-Chinese relationship had been cordial, and again during December, 1959 when tension had sufficiently developed due to border disputes. The pre-existing stereotypes towards all the ethnic groups, excepting the Chinese, remained almost unchanged. The difference between the number of desirable, undesirable or neutral characteristics ascribed to the Chinese underwent a significant modification. The percentage of desirable, undesirable characteristics assigned to them came down from 100 before the dispute to 30 during the dispute. Thus, Lindzey (30), reviewing the studies relating to change and persistence of stereotypes says that one should not assume that group stereotypes are easily modified. "It requires unusual political, economic or social events to modify them on a wide scale".

Development of Character : Character has been defined as an integrated system of traits or behaviour tendencies. It usually refers to the sum total of psychological and behaviour traits which are organised in unique manner in individual. Generally it has reference to morality. At a relatively young age, these tendencies are inculcated. However, a child because of his immaturity follows them with little understanding. Children conform to them due to their being prescribed by external authority of parents or other adults who are in a position to enforce them. In early years, these codes of conduct like honesty, cleanliness and the like are learned in relation to specific situations. Thus, it is not uncommon to find the same child being unclean in personal habits but neat in school-work, or honest at home but not in his class-test. Not only the child is immature, but he has learned these codes in certain situations only and is unable to apply them to situations other than those in which they have been inculcated. As age increases, the child is able to grasp broader concepts of honesty, cleanliness and the like and is also able to generalise. In this manner, he becomes more consistent in his behaviour. Earlier, his idea of honesty was rooted to concrete situations "in doing what mother says", or "not to cheat in a test because the teacher has warned". As he grows, he develops fairly abstract generalisations regarding honesty, cleanliness and other types of moral behaviour, and he is likely to behave more consistently in new situations which have relevance to the moral values that may have been acquired. In fact, this has been the main finding of the famous Character Education Inquiry (Hartshorne and May, 15; 16) in which approximately 10,000 children and youths were subjected to tests of concrete situations involving honesty, service and self-control which could not be recognised as such. It was observed that no child cheated in a wholesale way. They could not be grouped in distinct dichotomies like honest or dishonest, and clean or unclean. Instead, measures of character traits showed gradations from one extreme to the other with most people being between the extremes. The tendency to be honest or dishonest in the child depended upon his needs and upon the specific situation. Finding him honest or dishonest in

one situation, it was difficult to predict his behaviour in another situation. Thorpe and Cruze (55) summarize, "These experimental data indicate that, at least in the case of subjects studied, honest behaviour is not dictated by some intangible entity within the individual; it is, rather, a term of classification of acts which have been influenced by the child's dynamic needs in situations in which these needs had to be met. In explaining their findings, the investigators stated that deception is a symptom of social friction in which a conflict between desires or needs and the prohibitions of society is involved. Thus, 'character' of an individual does not constitute an innate constellation of traits independent of the situation and his need-structure. Hårtshorne and May have concluded that honest acts are not motivated by an inner entity operating independently of the situation in which the individuals are placed, but that they are functions of specific situations in the sense that a child "behaves similarly in different situations in proportion as these situations are alike and are comprehended as opportunities for deception or honesty."

What factors are related to the development of character in general? Certain correlates of cheating and dishonesty have been investigated. Boys who cheated were of lower intelligence, poorer with regard to the economic status of their homes, higher in suggestibility and tended to be retarded in their school work. Children who were higher in intelligence, those who came from homes of professional men, from higher socio-economic levels, scored better not only on honesty test but on service, perseverance and self-control tests. Thus, the development of an individual's character is not so much governed by the possession of certain innate traits, but by the situation, the dynamic need-structure, his intelligence and the socioeconomic factors operating upon him. One is not born with a good or a bad character. He develops one as a result of interaction between the individual's needs and the forces present in the situation and his socio-cultural environment.

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Part III

PSYCHOLOGY AND METHODOLOGY OF INDIVIDUAL DIFFERENCES

10

The universe reveals an underlying unity in the multitudinous variety of the manifest phenomena of our normal experience. This underlying unity is in fact the objective of almost all philosophical speculation. Science starts by concerning itself with the observable facts of the universe whether within or around us. In the process of analysing each entity the constituents are broken down into finer and subtler constituents until in the end an absolute indivisible energetic content is identified as the common underlying physical basis of all existence. Science too in this analytical manner reaches a point where differences among physical forms of existence are reduced to a minimum and a basic unity is postulated and proven. There are however, other branches of science which do not enter into such analytical processes. In this second kind of approach science accepts things as they are, no two of them being exactly the same. The universe is made up of an infinite number of relevant orders of things animate and inanimate, organic and inorganic. It is significantly the business of biological sciences to study these orders of things, without necessarily seeking to analyze them into their ultimate components. In accepting things in their wholeness and existential completeness the scientist seeks to study their external characteristics and by these to classify, order and inter-relate them. It is this study of the relational bonds and contacts among various orders of phenomena that justifies Comte's claim that "Science is foresight and foresight is power", and enables us to forge causal links by a process of experimentation and inference.

Differences, therefore, are the pith of the multitudinous life of our universe and without these all scientific activity will be starved of its staple grist. These differences run criss-cross in all directions and may be studied along any lines of classification or principles of gradation we want. In fact differentiation has proven itself to be of considerable importance as a principle underlying evolution. If things, do not change and produce differences, there is no progress. It is by a process of differentiation that the sensitive outer covering of an amoeba which is equally sensitive to light, heat, food and other such stimuli differentiates itself into the highly specialized and complex sensory organs of the primate. Are these evolutionary changes of a qualitative nature? This is a question not easily answered. It is increasingly being shown that what looks like a difference in quality may result from underlying changes in quantity. It is surprising

to realize, for example, that the female is differentiated in nature by an arrest along the line of male development and an elaboration of certain incipient functions which continue to lie dormant in the male. Thus whereas apparent functions may be different they result in the last analysis from a different play of emphasis on a number of complex quantitative constituents. In the sociological field water-tight classifications nearly always imply artificial dichotomies. In expressions, like 'half-dead' and 'not yet dead' the idea of a slow and gradual process of passing from complete vitality to a complete moribund state is reflected. "Married" and "Unmarried" again imply the artificial driving of a wedge in a time continuum, the marriage ceremony being a process of some duration in time which can be interrupted. Betrothal is often regarded as the point where being married begins. Although the castes in India seem to offer an incontrovertible example of clear-cut classes, the matter is not so simple, for it means that all ones ancestors were of the same caste. Gradation of caste purity can be conceived according to the number of pure caste ancestors, each dilution of pure blood producing the gradations such as are represented in ethnology by terms like, mulatto, quadroon and octroon. It is possible that in the ultimate analysis some clearly independent categories may be possible but quantities are the common characteristics of the phenomena of life and the world. On the other hand for practical purposes like finding the mean by the short method of tabulated data even quantities are treated as if they fell into discrete steps.

Since science studies the phenomena of life in its manifold mutual relationships, its primary interest is in differences and changes. We are also as scientists concerned with the overt nature of the facts we study. Some of these external characteristics are plainly of a simple quantitative nature like say, height or weight. Other characteristics are classifiable into mutually exclusive categories such as sex or alcoholism even if in a finer analysis they may be seen to rest on multilateral and complex quantitative differences. A variable or variate as its name signifies in an attribute which varies or changes from one example of it to another. Thus in counting persons their sex may be seen to change as you pass from person to person. Or their height for that matter. Sex and height are thus two variables. When a single variable is studied we have a univariate situation. Alternatively we could have a multivariate problem involving many variables together.

Thinking of differences we are immediately struck by the fact that apart from the differentia which set apart whole classes of phenomena, there are infinite differences, within the same class among its members, so that no two human beings may be identical. Philosophically of course the one ineradicable difference between any two persons or things is that the two must perforce remain unique in their particular location within the time-space continua; both cannot

occupy the same place at the same time. This is a uniqueness of mere geographical location but it is the primary differential for all things. Next the laws of heredity are such that each individual becomes a unique link between all his ancestors and all his descendants.

Diagrammatically :

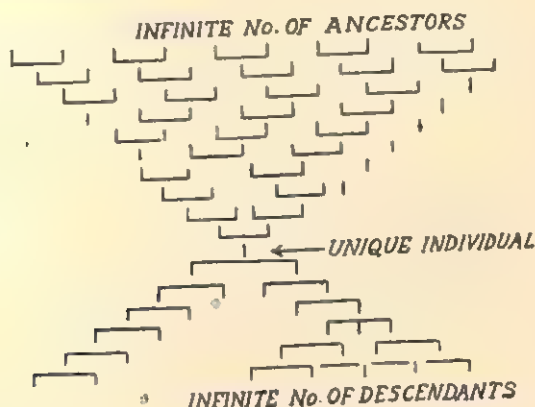


Fig. 1.

The behaviour of genes and chromosomes is such that every generation is capable of producing an infinite variety of individuals. Upon this unique native potential the environment, by inevitable differences of geographical and temporal location, begins to act in a unique manner right from the moment of birth and even before it for the mother's condition furnishes the foetus with a kind of prenatal environment which has a definite influence on the individual. According to Freud even the process of birth provides a unique experience of various degrees of trauma which leaves a permanent mark on the personality of the native. All these facts prove it beyond doubt that inter-personal differences are undeniable and basic facts of life. As scientists we are faced with the task of measuring these differences.

These differences are met with in their rich complexity. For any kind of crude or refined differentiation we need to tackle one thing at a time. This difficulty can be illustrated by the example of the factor of physique. While differences in the matter of physique are observable to the naked eye it is not possible to express them in quantities. As against this we can compare people's height or weight. These are single and simple variables which constitute the complex factor of physique. But of course Mr. X is not 5 ft. 6 inches; he is a human being and height is one of the characteristics he possesses. Thus height is only an *abstraction*, an attribute separated from the complex personality and treated in an artificial isolation. Tempera-

ture is another physical 'property' which we abstract from situations and things and treat in isolation. This is how science analyses the complex universe of our experience. These are known as variables in science. Persons are divided over such variables either sharply falling into mutually exclusive categories or continuously over a range of fine gradations which are infinitely reducible. In psychology the variables are abstractions in more senses than one. Intelligence for example is an attribute of man which we can abstract from his person and treat as a thing by itself, like, say, the power in an electric battery. But in mental sciences the matter does not end there. Height in the physical world or better still mass is an undeniable reality even if it is only found in association with physical bodies. Intelligence, on the other hand, is a *theoretic construct* and we assume it as functional maximally in a test situation before differences in respect of it can be noted. This makes the matter slightly worse for psychology and education. These branches of learning are condemned to a double dose of deconcretization in regard to their variables. The primary process of abstraction which isolates an attribute is necessary to all scientific description of a complex entity by its attributes which are exactly stated. It is the secondary abstraction of "reifying" a hypothetical variable which tends to raise serious doubt by placing the cart before the horse in a logical sense. For this reason modern psychology has tended to regard overt, observable behaviour alone as capable of furnishing it with the descriptive characteristics to be analysed and studied by the discipline. Secondly it is typical of the method of psychology to secure data on working hypothesis and seek confirmation of the theoretic constructs through them. This process of "lifting oneself by one's bootstraps" is a necessary opening gambit in social sciences whose variables are to begin with hypothecates of scientific insight. Psychology offers a large number of such theoretic variables variously categorized or graded for purposes of differential analysis and description. The nature of some of these will be considered later on.

Science according to Karl Pearson (30) seeks primarily to describe natural phenomena. This description is not particular and specific like that of a poet or a painter. In the world of art greatness consists in using the particular as symbolic or suggestive of a whole class of human experience and the poet's subjectivity in relation to a sun-set is capable of being generalised as aesthetic experience. Science on the other hand is concerned with objective reality and seeks to describe the general truth of common experience in regard to whole classes of facts. These general properties of objects or events are the abstractions already spoken of. To describe these in terms that convey identical meaning we need to measure them. Thus the favourite mode of description in science is measurement. This term has been subjected to much fruitful thinking during the last few decades, and currently a number of logical categories of it have been developed for our consideration. Stevens (37), Lorge (26)

Guilford (15) and Torgerson (42) have provided illuminating discussion of the subject and should be read by the curious. Measurement is in the ultimate analysis, the procedure which enables us to differentiate among objects or events. It is based on the isomorphism of one-to-one relationship between numerals and things or events. Differences between things are in respect of some property which may be simple or complex but behaves or is treated like a single variable. Preference as a linear continuum can include a large variety of things or events. Stevens offers four classes of scales which are ordered according to their progressive refinement. His nominal scale which implies a simple process of assigning things to appropriate classes by virtue of some attribute or property is comparable to a green-grocer separating some fruit into several heaps according to some property like size or freshness. Torgerson denies this activity the status of measurement, although there is good reason to believe that this can be the most rudimentary form which our capacity to differentiate at all among things of a class must take.¹ Torgerson's scheme utilizes the availability of a natural origin i.e. the point where the property shows zero magnitude to evolve four further types of scales. The second type of scale according to Stevens (and first according to Torgerson) is the ordinal scale which is provided by a system of ranks. Rank orders are merely positional things and imply only the judgments of more or less among any two objects. Many times in psychology and education this is the only kind of data we can get and the limitations then of this form of scale must be remembered. When not only items are comparable by magnitude but the or difference between any two is comparable to the difference between any other pair (including one of the old pair), we approach what is known as the Interval Scale. Thus when we can say that

$$A-B=B-C$$

or

$$A-B=C-D$$

we are here in a position to compare distances between the items scaled. In neither the Ordinal nor the Interval Scale have we an origin from which the series may be said to start except the accidental one of the lowest ranking or smallest item, which does not give a natural zero point for the scale of the property being examined. The Ratio Scale possesses all the desirable characteristics of a scale such as any physical scale like that of length or weight may possess; it has a zero point of absence of property with increasing magnitudes with intervals of different sizes between fixed values on the continuum. Torgerson's scheme using interval and availability of zero point as the two criteria provides another category of an Ordinal Scale with a natural origin. Although the category is produced when schematically the twin criteria of distance and natural origin

1. Modern developments like the "detection theory" concerned with absolute thresholds and the information theory utilize the nominal scale to great purpose.

are crossed, an example of this scale in empirical data of one's experience is difficult to find. When we order persons by some aspect of mentality it is very difficult to find a person who represents the total absence of the property that is being used for the ordering. Torgerson gives the relationship of radius and area of a circle as an example of the monotonic functional relation passing through zero origin. Coombs (8) uses objects and distances in between treating them further as nominally distributed, partially ordered or wholly ordered to produce eleven distinct scales. Stevens (37) has shown that the in-between distance is capable of leading us to the Interval Scale. Coombs' ordered metric scale depending on judgements of more or less among intervals is also reducible to the Interval Scale and does not necessarily occupy the intermediate position between Ordinal and Interval types. He further suggests a Logarithmic Interval Scale of a status parallel to the Linear Interval Scale standing between Ordinal and Ratio types.

Torgerson draws a distinction between 'kinds of measurement' which are concerned with the type of information given and 'types of scales' which are distinguished by the amount of information that is being conveyed. In the above scales, from Nominal to the Ratio, an increasing quantum of information regarding class, order, distance and origin of the property measured was being brought forward. When we measure a unitary and simple property like length we are dealing directly with a single variable and are producing a fundamental class of measure according to Campbell (6 and 7). Such a variable, exemplified by length or age, possesses both "operational and constitutive meaning" since we know what we are measuring are quantities which can be mathematically treated. The other kind of measure is derived from the combination of two primary fundamental measures and is represented in variables like density or the I.Q. (in the second example the M.A., is not exactly a fundamental measure to begin with). A third kind of measure is what Torgerson happily calls "measurement by Fiat" i.e. by arbitrary assumption of a relationship between observation and the property. Examples of this kind of measure are the empirical formulae which yield indices of learning ability or socio-economic status. Obviously in the social sciences there is need to evolve whole *congeries* of such measures defined in advance on the basis of working hypotheses, which possess no direct or even derived intrinsic constitutive meaning but are operationally quite free.

These are according to Ray (31) the structural characteristics of measurement. On the functional side he is content to be able to use them for producing distributions (implying variance), to regard them as reproducible and for predicting related measures. These simple functional requirements would necessitate scales of different degrees of perfection e.g. reproducibility apart from the consideration of reliability would need a scale of the Ratio class; similarly pre-

are as many as the number of cases viz. 15. The difference between each single value and the mean is symbolically expressed by

$$d = X_i - M_x$$

where X_i = the value pertaining to case i

M_x = the mean of the given number of cases. The mean is given simply by summing up all values and dividing the sum by the number of cases for which values were summed. Symbolically

$$M_x = \frac{\sum^N x_i}{N}$$

where \sum^N means the sum of values over N cases, each case designated by i .

The Standard Deviation is defined by the formula $\sigma = \sqrt{\frac{\sum d^2}{N}}$.

It is the nature of the mean that $\sum d = 0$.

It is to avoid this kind of strulification that d is squared so that the minus values disappear : because, it must be remembered, in S.D. we are not interested in the direction of differences and do not want the minus order of difference $X_i - M_x$ to cancel a plus order of difference. By squaring we garner all negative and positive differences. The squaring is later "unsquared" as it were by square-rooting the whole thing. Variance, another popular and useful measure of spread is obtained by removing the radical from the formula and doing away with the squarerooting. Symbolically

$$V = \sigma^2 = \frac{\sum d^2}{N}$$

In words this is "mean deviations squared", the deviations being from the mean i.e. $d = X_i - M_x$. There are of course other measures of scatter of individual values around the derived mean which can be read in any elementary text of statistics.

The Standard Deviation and Variance are directly reflective of the size of individual differences prevailing in a group, and procedures for finding them by short methods for large N 's should be looked up in proper texts. Ranks also yield an index of individual differences without any reference to the size of these differences. This is simply a positional difference in ranked material. Each case occupies a place on the rank ladder and the inter-person or inter-item differences are entirely enumerable in terms of places intervening between any two cases or the middle case and all the others by turn. The middle case is known as the median case in this form of ordered distribution. It may be noted that mean and median are location statistics whereas individual differences are reflected in σ and σ^2 which are statistics of range of dispersion and represent not points but intervals and areas.

Just as there are individual differences there can be differences among samples of N size each. Random samples from the same population can be compared through their representative central values like the mean or the median. Each sample mean is in effect an estimate of the general mean of the entire population and depending on the size of the N the sample means are closer to the general population mean. As a result of this their fluctuation around the general mean is less wide and an index of this is given by

$$\sigma_m = \frac{\sigma}{\sqrt{N}}$$

This is the standard deviation of sample means of size N each, their distribution being known as a 'sampling distribution'. When differences between two independent groups are to be considered the differences between obtained means are taken. This difference is measured out in terms of what is called the Standard Error Difference between means. Symbolically

$$\text{where } \sigma_D = \frac{M_1 - M_2}{\sigma_D} = \sqrt{\sigma_{m_1}^2 + \sigma_{m_2}^2}$$

In connection with this preliminary description of statistics concerned with individual differences it may be pointed out that covariance of which correlation is a form is entirely dependent on the variance prevailing in the two variables based on a common sample of N cases. When for the same persons or things two observations are available or persons are paired on some principle like husband-wife or father-son it is possible to show that inter-person difference in respect of one member is or is not or is in reverse order reflected in the other pair. This produces relationship ranging from $+1$ through 0 to -1 degree of correlation. Investigation of such relationships of parallel change is of prime importance in psychology and such relationship beyond 0 can only subsist on the basis of individual differences. In fact if individual differences are not large, a significant correlation symbolized by the letter r cannot emerge. The relationship of r to N and σ can be seen in the formula for r , one form of which is

$$r_{xy} = \frac{\sum xy}{N\sigma_x\sigma_y}$$

where r_{xy} is the correlation between X and Y quantitatively given,

Σxy is the sum of all products of deviations of X and Y from their respective means, the signs being taken into account throughout. This feature of relationship possibilities between two variables is best illustrated by the following diagram :

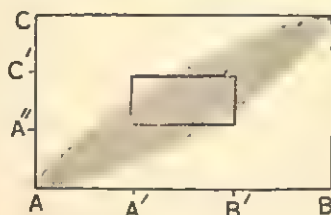


Fig. 2.

The wider range of A—B and A—C will yield a higher correlation than the smaller range of A'—B' and A''—C'. Individual differences apart from being of interest in themselves make it possible to see them in mutual relationship, by means of statistics like the coefficient of correlation and the covariance.

The scientific approach to research in psychology, and education opens out into three standard methods which are not mutually exclusive. These are the clinical, the experimental and that concerned with individual differences. In these three modes of tackling psychological investigations the N increases progressively until in the method of individual differences we are dealing with substantial number of cases and the method can be regarded as largely a group of statistical techniques of univariate and multivariate analysis. The entire theoretic structure of statistics rests on large numbers of persons or objects or observations which differ among themselves in respect of a given characteristic, given in "categories or quantities. Depending on the nature of the variables concerned we get various measures of correlation among them some of which are presented summarily below :

<i>Type of variables</i>	<i>Type of correlation</i>	<i>Symbol for it</i>	<i>Example</i>
Both continuous and quantitative	Pearson coeff. of correlation	r	Height and weight
Both discrete and qualitative	Contingency coeff.	c	Academic grade and nationality
Both really dichotomous	Phi-coeff.	ϕ	Sex and marital status
Both artificially dichotomized	Tetrachoric	r_t	Exam. result and mental breakdown
One continuous, the other a real dichotomy	Point biserial	r_{p-bis}	Sex and exam. marks
One continuous, the other an artificial dichotomy	Biserial	r_{bis}	Mental subnormality and exam. mark
Both given in ranks	Spearman rank correlation	ρ	Height and weight ranks
One continuous against several other continuous ones	Multiple correlation	R	Aptitude score and scores of the battery of tests.
Several continuous against several continuous	Canonical correlation		A set of criteria values and a set of predictor scores

When the relationship departs from linearity *i.e.* the density of the points representing cases on the graph of the related variables follows a curvilinear trend to which a straight line cannot be fitted, we get Eta symbolized by η which is a ratio and not a coefficient like the other forms of correlation given above. Its nature, therefore, changes for the regression of X on Y and Y on X. Also when three variables are inter-correlated it is possible to find a partial correlation between any two by holding the third constant. If we know all three r 's then a more *simple* formula using only these values will give the relationship of any two after the effect of the third is nullified. Sometimes when the real link between say, A, B is provided mainly by C partialling out for C will reduce r_{AB} radically. The following variables designated by these letters illustrate such a case :

A=height

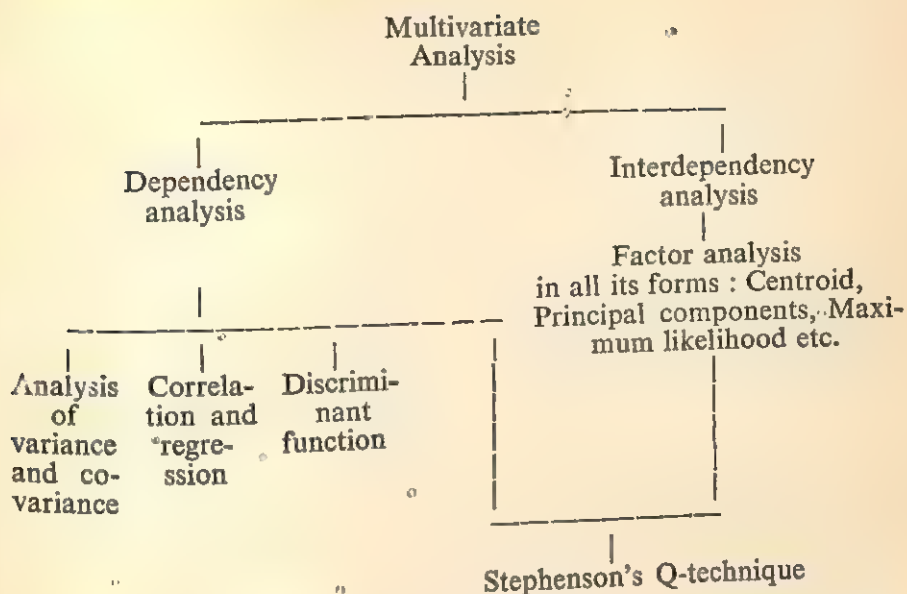
B=language mark

C=age ranging from 7 to 15 years.

Here most of the correlation between height and linguistic attainment will be due to the factor of age.

Individual differences methods which are largely statistical analyse single variables for their distributions. In doing so they are concerned with a mere description of the single variable. This includes the calculation of the central tendency, some statistic indicating the spread, a consideration of the shape of the curve with regard to its symmetry, departures from it being indicated by skewness or "tailing" by peakedness or flatness and by the number of humps the curve has. In a summary notice the entire distribution can be checked for its departure from the standard normal curve the properties of which are well known. Every finding is accompanied by the error to which it is subject under laws of sampling, which is known as the Standard Error of the given statistic (Probable Error or P.E. is an older term related to S.E. in being $\cdot6745$ times the S.E. so that $P.E. = \cdot6745\sigma$). This is sufficient for what may be called the univariate analysis of any obtained data. Formulae for deriving appropriate statistics and their S.E.'s for the study of a single variable will be found in manuals of statistics.

Multivariate analysis offers a vast field of study to the student of individual differences and is equipped with many ingenious and powerful tools of research. Multivariate analysis subdivides into two major types of activity. One of these is known as 'Dependency Analysis' while the other is designated 'Interdependency Analysis'. The following diagram represents some of the methodological developments of these two major branches of multivariate analysis :



In dependency analysis one of the variables is known and the other is estimated by means of a relationship established on an experimental sample. In analysis of variance we establish the extent to which certain factors of grouping classification (like sex or level of intelligence or school grade or other types of 'treatment' groups) influence some dependent variable known as the criterion (such as school results or degree of adjustment). Not only the effect of single factors but even their double or triple interaction is shown to be well beyond chance and therefore significantly contributory to the differences in criterion values. This technique due to Fisher (13) is easily one of the most powerful tools for utilizing individual differences to reach scientific conclusions of great value and significance. Correlation through regression enables us to estimate a person's likely standing in a related variable. By using regression weights it is possible to maximise the multiple correlation of a set of predictors with a given criterion although using these predictors in a new sample would generally imply a fall in accuracy. In discriminant function weights are found for a set of variables such that the members of two separate groups will be maximally differentiated and a technique of stating the group affiliation of any new person by his multiple scores will be available. All these methods show the dependence of a criterion on some variables which are, so to say, trained upon it like a battery of guns.

As against these approaches inter-dependency analysis deals with a set of inter-related variables, none of which is regarded as being a criterion and so apart from the others and dependent upon them. In this procedure we derive from the manipulation of obtained

relationships, altogether new artifactual variables. The status of these is comparable to that of the mean which is developed from an obtained set of measures but has otherwise no empirical independent existence of its own. In factor analysis a start is made with a matrix or square box of correlations. These are then "analysed" so that certain factors are obtained which have only a mathematical existence to begin with. It is then shown with varying degrees of perfection that far fewer of these can 'explain' or 'account for' the observed relationships. They are then accepted as tentative explanatory concepts which indicate the functional unities underlying the overt, surface phenomena of the matrix of correlations. Factor analysis in its several interesting and rewarding forms is one of the healthier exercises for a keen student of psychology with a moderate degree of sophistication in mathematics. Stephenson's Q-technique (36) has been ambitiously put forward as a new and revolutionary method in Psychology. The normal procedure in correlating is to have an N of persons performing on a few n tests which are intercorrelated. Stephenson reverses the roles of persons and tests; and use N tests to correlate n persons. He believes that this has partly the status of a dependency analysis although the frame is that of R -methodology. Naturally the artifacts of centroid axes generated are hypothetical person-factors within the cluster of actual persons. These factor axes are of great psychological interest as representing complex signpost personalities which variously constitute actual living persons. It would be possible, for example, to establish a personality factor for Introversion—Extraversion by these means. Guttman's Simplex analysis (17) exploits the fact that tests (not affected by learning and specific memory) can be repeated on several occasions using N persons. In this case we have n occasions which are intercorrelated. This kind of analysis reveals the factors which play a part in learning and have a remarkable theoretical foundation in the contributions of Guttman and his associates. This brief and sketchy reference to some of the more significant techniques of statistical analysis will go to prove that individual differences are the staple material on the basis of which a large number of scientific discoveries are made in the field of psychology.

A preliminary question in connection with the causes and growth of individual differences often asked relates to the differential contribution of heredity and environment. A very large amount of research has been reported on this issue. The mechanism of heredity has been shown earlier to be so complex that every individual is more or less unique. The uniqueness is brought into further relief by the interaction of environment and organism which is always selective and peculiar to each individual. Many conventional ideas about heredity are incorrect. Firstly characteristics we see in individuals are not produced by single or even a group of genes but

the structural properties of the anatomy and the biochemical constituents. Further, geneticists have shown that the term environment in relation to these carriers of heredity is much more pervasive and prior than the moment of birth. It is an oversimplification to speak of environment as merely an external influence and heredity as a sort of spring-driven internal machine. Each germ or body cell exists among others which provide its inter-cellular environment. More than this, the genes themselves release their forces within the cytoplasm of the cell which houses them. This intracellular environment is capable of affecting the work of the genes; as a result a mutation or heredity variant can be experimentally produced by conditioning the germ cells in specific ways. These subtle influences affect, apart from the direct impress of the mother's body condition, the growing foetus. It is, therefore, misleading to think of heredity and environment as two independent factors operating conjointly to contribute their share to the emergent personality. The more acceptable view is to regard them as interacting upon each other from the earliest so that in the finished product they are inextricably mixed up. Heredity provides mainly the structural (which Anastasi (3) describes as "anatomical physiological biochemical") basis of individuality. "This basis is such that it provides for a very wide variation in the functional characteristics which emerge. Except in certain pathological conditions genes do not behave like simple Mendelian units. Thus the hereditary potential has a wide range of functional possibilities, and this potential grows by interaction with environment from the very beginning. Not only are the factors of heredity and environment highly complex but by their peculiar interaction they invariably produce unique individuals. For example, it has been found that practice in an overall sense improves the performance of a group but also produces within it considerable differences due to the differences in genetic constitution. It has also been shown that while common environment after birth will level up differences in social attitudes and behaviour, differences in acquisition of knowledge and skill will be heightened. "Unlearned behaviour" is due to structural factors in the organism and in some forms depends on the maturing of the function to manifest itself. Reflexes and rigid unfolding of instinctive activities have a biological value for the organism but, by and large, the rule is that the less is the newborn equipped with them the longer the road he has ahead of him to travel to reach a rich and manifold consummation of wide possibilities."

In seeking to measure human individuality its intrinsic complexity is unravelled and resolved into simple hypothetical variables. Tests seem to measure innate capacity but in reality they measure only samples of guided and controlled behaviour in response to the test stimulus. That the responses reflect some ability which is wholly innate is a gratuitous assumption. The present function is the product of the interaction of heredity and environment. It can, therefore, never be completely disentangled from changes

due to environmental influences. In any test score we do not measure even the overt behaviour which is a continuously changing process; instead we retain a record of the behaviour responses which furnish us with clues as to the present capacity of the respondent. We, therefore, approach the individual's characteristics through a record of his responses to certain predetermined and controlled stimuli in the environment. The clue to the 'inward' is again from changes in the outward environmental paraphernalia rigged up for testing purposes.

The objectives in clinical, experimental and individual differences approaches are different by emphasis. In the clinical we are interested in a 'case', and study it in detail and comprehensively to obtain a global picture and insight into the condition, the purpose being to ameliorate it. In an experiment the interest centres round an experimental variable the effect of which is demonstrated on the criterion variable under controlled conditions. The "field experiment" of sociology mediates between the experimental and statistical approaches. It is only in the method of individual differences that we are concerned with variables themselves in their natural setting. The size of N is the largest for such a study. In the "field experiment" the N is slightly smaller to make the sample manageable for the introduction of some experimental variable or "treatment". The attention in this exploration of large N 's for limited variables is directed to the behaviour of the variables themselves. For example, we may, by the individual differences method, want to study the intelligence of 12 year olds. There are hardly any variables in psychology apart from some structural aspects of individuality which can be directly measured or even identified. Not only is the function or trait artificially split off from the total personality of each individual but its real existence is itself a matter sometimes of polemics, as it actually is in the case of intelligence. The only way is to provide a 'structured' situation and adequate motivation to let the hypothesized or theorized function produce changes in the test paraphernalia. These changes which are recorded give us an indication of the measure of the attitude, range or speed of the function. The differences observed may be interpersonal or intrapersonal in which case repeat measurements are made until an N of occasions or trials are available for a given person. The more conventional and useful investigations deal with interpersonal differences as the longitudinal approach of intrapersonal differences involves an intolerable time lag. Except for genetic or developmental study or learning situations this latter method is therefore rarely to be used.

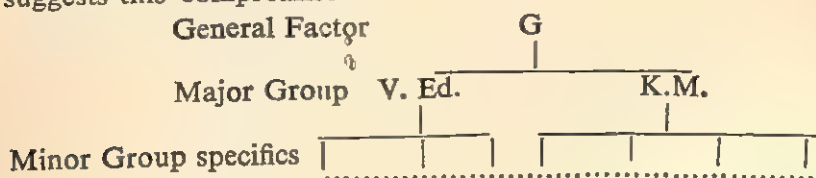
We are now in a position to consider the variables which psychology has isolated for the study of individual differences. These tend to fall into two large groups. One covers all those functions which appear to operate on mechanistic principles such as hold good for many forces in physics. The term mechanistic

should not import any sense of purely physical correlates. It is employed to suggest the comparatively rigid functioning of intellectual processes within the fixed frame of logic as against the relative fluidity of emotional and vitalist responses which enjoy a range of freedom not possible in the cognitive and neural spheres. This group of functions includes neural and cognitive phenomena while the vitalist, dynamic class would cover affective and volitional aspects of mentality. Measurement of neural and cognitive, intellectualist functions is easier by reason of this difference. In saying this it is not at all implied that satisfactory and correct neural and intellectual response is produced by a mechanical triggering off of rigid connections. It is quite possible that responses of even this class result from molar reactions of the organism and do not involve any molecular analysis of the components of the situation. It is, however, true that configuration of the test situation presents a fractionated logical design the completion of which is predetermined by the key which furnishes the only admissible solution. Such infallibility of situational design is not possible in the vitalist sphere.

There are several aspects of the total human personality in respect of which individual differences can be investigated in relationship or singly. There are differences in mental ability, aptitude, sensibility, in the cognitive area : in the vitalist area we have differences in personality conceived as typologically organised or measurable in traits, temperament and physique, interests and attitude, and the tendency to imbalance and mental abnormality. Then there are differences among groups formed on certain principles of classification. Such groups are formed by social class, caste, race, sex, age, culture and typological modalities. We are here, however, not concerned with differences among groups as such.

Mental ability is a clear case of theoretic constructs replacing functions which are indirectly measurable through performance. A large number of definitions of such ability including the noegenesis of Spearman have been offered. Operationally maximizing the first factor is a good approximation to this pervasive factor. Spearman's two-factor theory should be valued historically as the discovery, fundamental to all subsequent development of a general factor. Thurstone's multiple factor analysis generalized Spearman's technique so as to admit the extraction of subsequent factors. It was realized quite early in the wake of Spearman's epochal discovery that insistence on vanishing tetrads and hierarchical order were unrealistic requirements which experimental data would not respect. The 'Oligarchs' of Primary Mental Abilities of Thurstone was another extreme formulation which compounded differences with the older position by admitting oblique rotations and second-order factors. The London School represented by Vernon(44) has put forward a type of construct

that is popular as well as practicable. The following diagram suggests this compromise :



Burt (1940) had earlier suggested that an analogue of this hierarchy existed in the classifications of the Schoolmen known as genus, species, proprium and accidens. This is exemplified in the genus man and species let us say Aryan and Mongoloid. Each individual then is a person proper who is at a particular moment in a special state which is accidental. The specific in tests represents the error component of the total variance of the tests, which is peculiar to each trial. Following any of these theories including the 'anarchic' which denies the existence of any generality, tests can be put up to measure say, the general mental ability known commonly as intelligence or of perceptual speed of Thurstone. So far as intelligence is concerned its appraisal is approached either through the concept of mental age or through a group test score. Test tasks are assigned to each age group and each task carries some month's credit of mental age. By counting all these credits the subject is awarded a mental age. I.Q. is the ratio of mental age to chronological age. It is thus not a measure of intelligence as is commonly believed but of *brightness*. For example, in the two cases :

$$A : \frac{12}{15} \times 100 = 80.$$

$$B : \frac{10}{8} \times 100 = 125.$$

While A is less bright than B the actual ability at his disposal on the day due to the considerable difference in age; 15 years against 8 years is slightly greater (M.A. 12 years against M.A. 10 years). The I. Q. has been considerably criticized in recent years and the implicit faith we had in it of yore is shaken. The I.Q. cannot remain steady firstly because growth curves are highly individualistic things and secondly because environmental differences are liable to affect the functions we normally test for intelligence. In fact Hull has gone to the extent of saying that for all practical purposes the general mental ability is identical with a general scholastic factor. In the major group factors the factor V. E. is verbal-educational and proves the existence of such a general factor for successful schooling. K : M is a practical—mechanical factor through which 'g' manifests itself by contrast. Test scores are a matter of simple summation of 0 or 1 weights assigned to items in a long test. These scores can be used to derive age, grade (*i.e.*, school class) and percentile norms. The I.Q. has a built-in norm system as it were. Simon-Binet and its adaptations yield by personal individual administration a mental age and are obviously meant for use on growing youth. The Wechsler Bellevue

is an American adaptation meant for adults and is used with mental patients. Paper and pencil group tests for literates and illiterates are many. Minnesota Paper Form Board and Raven's Matrices tests are culture free and can be given to illiterates. Verbal group tests are available in very large numbers. Among these Otis tests are well-known in the U.S.A. In the U.K. the Northumberland series due to Godfrey Thomson and associates are rightly famous. In India Binet type of performance tests are due to Rice, Kamath and Bhatia. The General Classification Tests used in the American forces are probably one of the most impressive group of tests of general ability. A PMA type of battery for verbal, numerical, reasoning, spatial, perceptual speed and rote memory was put up by Varma in India.

Aptitude is a much more practical concept than ability. It simply means the potentiality for succeeding on a job of which one has had no experience. It is a 'promise' of future performance not present 'capacity' which is what ability implies. Also aptitude does not commit us to any theory as mental ability always does. Aptitude has been defined as the 'probable rate of learning' a new work. The simplest method of assessing such a potentiality is to give the subject a sample of the work he will be expected to do.

This 'miniature' test can be quite valid but presents difficulties in scoring and also does not take into account the tempo of the type of person who warms up to his work slowly. The second method is to set up a battery of tests to cover the various functions necessary for success on the job. These functions are identified through analysing either the work itself or the successful worker. This is known as a 'job analysis'. The principle in selecting such tests is to put together only those tests by preference which show low inter-correlations among themselves but high correlations with the criterion i.e., the measure of success on the job. This means that, to begin with, one needs an experimental sample of persons for whom scores on all the tests and the criterion values are available for the correlations to be worked out. For good range we ought to take in persons likely to fail badly also. This is not always allowed so that correlations are available for a selected group only. Corrections have then to be made for restriction or narrowing of range or spread on this account. The tests are weighted differently by regression coefficients to yield the highest multiple correlation with the criterion which becomes the validity coefficient of the aptitude battery. Aptitude tests are used for selection of personnel in many spheres. In industry, armed forces, civil services and vocational and technical courses aptitude tests are being now used to select men and women who are likely to make good in the work they will have to do. The Educational Testing Service in Princeton has a large number of batteries of tests for enabling institutions to select youth for various courses of study. The British Institute of Industrial psychology similarly has provision for such selection. In testing educational aptitude the

best team of predictors generally are a sound test of general ability, a test or two of special abilities and a good comprehensive achievement test in the subject or course concerned. These can by regression give a very good slant on the criterion. A number of aptitude tests are being constructed in India by students of education.

Achievement differs from ability in being acquired. Achievement in school subjects is wholly learnt by conscious application. While ability testing can never be completely disentangled from environmental influences the intention therein is to reduce the effect of acquired knowledge and skill, and emphasize innate power to the maximum. A very large number of tests of achievement in school subjects are available in the U.K., U.S.A. and India. Achievement tests are limited in their utility and application because they depend largely on a set course which differs from place to place and time to time. Students at different educational levels show considerable overlap in such tests. The validation of such tests is made against the examination mark which is a poor criterion on account of its unreliability and subjectivity.

Neural differences are investigated by the psycho-physical methods of psychology which explore limits of sensibility and conditions of apparent equality as well as by reaction time experiments and tests of motor coordination and control. As these involve experimental set up and individual procedures of measurement large Ns are rarely available for their distributions. These measures therefore pertain more to the experimental method and do not figure largely in methods of individual differences. Several factors of complex motor skills have been reported by Larson, (22) and Fleishman (14). The Oseretsky tests of Motor Development of Russian origin published as early as 1923 give measures of 'motor age'. In India there has been no growth of this kind of test because there has not been much coordination between psychologists and employers of skilled labour.

On the dynamic side, interests and attitudes are believed to be comparatively less stable than temperament and personality. Strong's (38) Vocational Interest Blank is well known in the interest area. In Eysenak's words, "This Blank is a device by means of which patterns of interests characteristic of members of different trades and professions may be determined". The trade, and professions e.g. engineers or doctors, show distinctive pattern of endorsement on 400 assorted items, and the keying of items is entirely empirical on the basis of actual responses of the members of a group. Naturally the instrument due to Strong is not a measure of interest in the profession but the degree of similarity of a person's response pattern to the professional pattern. Thurstone (40) offered a perceptive analysis of the interest areas into four major zones: interest in science, in language, in people and in business. Kuder (21) has evolved a Preference Record—Personal & Vocational. By

using internal consistency criteria he divided interests into 10 major areas viz. outdoor, mechanical, computational, scientific, persuasive, artistic, literary, musical, social service, and clerical. Allport and Vernon (2) in their test called 'The Study of Values' followed the scheme of Spranger's 'types of men' and produced a Preference-judgments test for the areas theoretical (rational, scientific), economic (utilitarian, useful), aesthetic (beauty, harmony), social (people, human relations), political (power, dominance), and religious (unity, communion). Strong has further shown that interest patterns are stable over long periods of time. There are, however, some cases which show considerable change but they are the exceptions rather than the rule. Many studies of interests have been conducted in Indian Universities and Colleges. Very few longitudinal studies are available in India but there is reason to believe that interests would show as much overall stability in this country as anywhere else.

Thurstone (39) believes that attitude is a complex of man's inclinations, feelings, bias, ideas, fears, threats etc. Opinion is a verbal expression of attitude. Thurstone was the first to propose a measure of attitude by utilizing the constant method of psycho-physics for scaling statements on an issue for their strength in favour of or against it. A large number of judges sorted the statements (e.g., the cinema is the greatest single corrupter of youth or the cinema is a tolerably good form of entertainment) into 11 categories ranging from the most severely condemnatory to the most flattering. A graph was prepared with the 11 equidistant points as the basic line and frequencies of responding judges on the vertical axis. The frequencies were cumulated from 0 category to 11. The reading on the base line against 50 per cent frequency was taken. This is the median scale value awarded to the item by the judges on the base line scale of 0 to 11. An example is shown below :

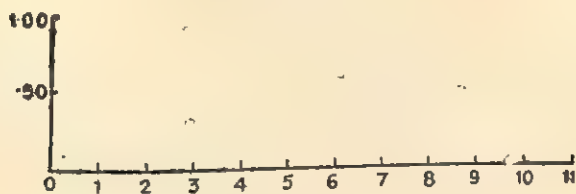


Fig. 3.

Thurstone's plan is to have a large number of such statements endorsed or rejected by the subject and then take the average of their values which shows his or her position on the scale. Likert (25) later modified this by weighting the response which was allowed to range over five rating points from 'strongly disapprove' to 'strongly

approve'. Guttman (16) gave a theoretical reorientation to the problem of attitude measurement by seeking statements which behaved logically in endorsement so that an extreme position like "cinema is the greatest corrupter of youth" would include a milder position like "Cinema is a waste of time". Coombs (8) felt that there was need to consider the position of the judge who is bound to assess statements as close or remote from his own standpoint. Lazarsfeld (23) brought the concept of underlying variables of factor analysis to bear on the attitude area and showed that classes formed by attitude differences are responsible for the observed inter-correlations among responses to items. These 'latent classes' could be identified like the underlying factors. The favourite methods of attitude scaling are those due to Thurstone and Likert, and several scales were prepared for specific purposes. Many have been prepared in India by research students but these belong largely to the archives of Indian universities.

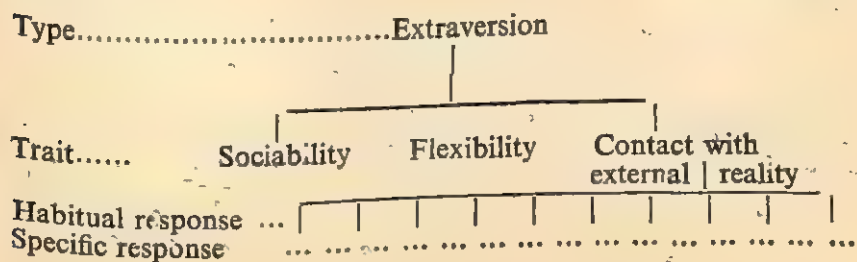
Personality has been considered from the point of view of typology on the one hand and a system of traits on the other. The extreme typological position can give us pure types as modes just as the trait approach can give us an individual as a complex of uniquely proportional traits. The more reasonable and popular view is a compromise with the traits organized type-wise and viewed as continuous variable connecting the archetypes. Kretschmer, Jung and Sheldon have offered typological classifications which have become the common places of modern psychology. Kretschmer's constitutional types were the pyknic, the athletic and leptosomatic. His dysplastic category included the mixed types. These were later reflected in Sheldon's viscerotonic endomorph, somatotonic mesomorph and cerebrotonic ectomorph, the 'tone' referring to the temper of mind and the substantive term referring to the constitutional morphology. Jung used the major polarities of Introvert—Extravert and by superimposing the unconscious functions of intuition and feeling and the conscious ones of thinking and sensation developed eight main types in purely psychological terms. Typologies stress focal points represented in 'typical' persons; this implies mutual exclusion. In the dimensional approach the dominating characteristic is a continuous variable with one mode in the middle and extreme polarized values at the focal points. The 'types' measures are mutually exclusive, balanced and hence *ipsative*. Having more characteristics of one type means exclusion from those of the others. Ekman (11) has shown that we can account for the typological variation of Sheldon by postulating dimensions which are one less than the types. Then the leptosome becomes a mere negative of both the pyknic and athletic characters. Thus there are only two dimensions of largely built muscular and fat and flabby giving athletic and pyknic types. The dry long leptosome is a contrast to both on the negative side and furnishes by a mere double negation the third type. It may be of interest to the Indian reader to note that

the Bhagawadgita speaks of the types tamasik, rajasik and satwik which are closely analogous in mental characters to Sheldon's types. Sheldon has offered a scheme of physical measurements to determine the type affiliation or status of an individual (34). There are tests which claim to measure extraversion-introversion tendency in persons. The inter correlations of such inventories are rather low. Neuroticism is another personality variable which has been shown to be independent and orthogonal to extraversion. Neuroticism is not as the term apparently suggests a milder form or a stage towards Psychoticism; the two are also independent and orthogonal. Thurstone (41) using Guilford's data produced the following seven major factors (Guilford's own analysis having yielded as many as 13 different traits).

- 1) Active, 2) Vigorous, 3) Impulsive, 4) Dominant, 5) stable,
6) Sociable, 7) Reflective.

Cattell has combined the factor analysis of ratings, questionnaires and objective tests to evolve 12 basic personality traits. These are : cyclothymia v. schizothymia, intelligence v. mental deficiency, emotional maturity v. emotional instability ; hypersensitive emotionality v. phlegmatic tolerance ; dominance v. submission ; surgency v. desurgency ; positive character v. immature, dependent character ; charitable, adventurous rathymia (happy-go-lucky-attitude) v. withdrawn schizophrenia ; sensitive, anxious emotionality v. rigid, tough, poise ; neurasthenia v. obsessional character ; cultured mind v. boorishness ; and surgent cyclothymia v. paranoid schizophrenia. Cattell has written profusely and the interested should read his original contributions for details of his classification. It offers obvious enough polarities which are possibly linked and could possibly be further reduced by use of purer variables. Adorno et al (1) have produced a scale for Authoritarianism ; this social-political characteristic was found to be a combination of the independent factors of tough mindedness and conservatism.

The type and trait controversy is resolved by conceiving of the type in terms of traits at habitual and specific response levels, as suggested below :



Very competent summary of work in this area has been provided by Eysenck (12) which should be consulted. The distribution of such variables among different groups have not been so well reported and apart from the validity of a particular test or inventory or projective method adequate norms for Indian populations are not yet available.

Personality is a complex phenomenon and has for that reason been over-defined from various angles. Largely "mask" definitions which are concerned with 'Persona' aspects designated surface traits by Cattell stand out in contrast with 'substance' definitions which deal with Anima, the internals or the 'source' traits of Cattell. The former are behaviouristic and nomothetic in orientation whereas the latter are analytic and ideographic. A good logical break up of the complexity of personality reduces it to four major sectors viz. cognitive (intelligence), conative (character), affective (temperament) and somatic (constitution). Tests of character are due to June Downey (10) and Hartshorne and May. Downey uses variables employed in graphological analysis of character and measures by handwriting executed under specific conditions, 'fluidity', 'forcefulness' and 'carefulness'. Factorization however, did not bear out her categories (Gates 1929). Hartshorne and May carried out an ambitious programme. They studied tendency to deceit, service, self-control and integration of character. No general factor for character, however, was demonstrated. This work has been well summarized by Eysenck (12).

Mental abnormality includes extreme groups in respect of general ability and persons with 'gifts' for extraordinary achievement in special fields like music or art. An ordinary general ability test will enable us to form contrasted groups in respect of intelligence. For special 'gifts' we have tests like Seashore's test of musical talent which measures sensibility to pitch, intensity, time, tonal memory and rhythm (33) or that of Meier's test of artistic sensibility (27) and Lewerenz tests in Fundamental Abilities of Visual Art. There are other tests which split up the general function into narrower ones like 'mechanical comprehension' or the well known PMA of Thurstone to yield measures of special abilities.

Imbalance of the whole personality is a matter of grave concern and there have been several attempts to devise objective measures for such conditions. In this context the Wechsler test which is a development of the Binet type of performance test with a new slant on adult mental patients sets astride both cognitive and conative-affective approaches, in so far as it measures failure of intellectual functions in relation to mental illness. The Wechsler-Bellevue test (45) is a point scale (since the question of age does not directly arise in adult cases) and has eleven subtests yielding, by two groupings 'verbal' and 'performance' IQ by literate and illiterate persons. These tests yield differential profiles for different types of mental illness on the basis of empirical data, which

furnish the diagnosis with cues for the classification of subsequent cases. The discovery of the effect of disturbances of total personality on the somewhat mechanistic functions of the cognitive area emphasizes the global nature of the human organism. Several interesting tests were devised by psychologists for securing a global picture of personality so that disturbances may be understood in all their complexity of interaction within the totality of the person's mind. Among these the Rorschach test (32) has come to acquire the status of almost a 'cult'. The Rorschach ink-blot is part of the more familiar argot of the psychologist and the clinician. Reactions to these observed by highly trained personnel furnish the record which is analyzed for location (whether response is to part or whole of the blot), determinants of form, movement, shading and content popularity and finally shock from colour, shading and kinaesthesia. These characteristics are variously interpreted e.g. colour shock might indicate neuroticism, while movement responses indicate deep-lying forces producing a fantasy life. In the final analysis of personality five areas are described by this complex system of interpretation (20) viz. the intellect, control outer and inner, adjustment, *erlebnistyp* (experience-balance) indicating the dominance of introversion or extraversion, and the emotions. Clinicians with adequate training in Rorschach technique and wide experience find it a useful and valid method of obtaining an insight into human personality specially when the adjustment is found to be defective.

The Thematic Apperception Test known as the TAT is due to Morgan and Murray (28). In this a set of 30 pictures are employed (10 for each of the sexes and 10 for both) to stimulate the subjects to build stories around. The story is thus analysed under five heads: the hero (or heroine), needs-primary and secondary, press (of external forces on him or her), the thema indicating a particular need-press configuration, and the outcome which is a sort of 'optimism index'. The analysis of responses in such tests (known as projective on the assumption that the unstructured stimulus situation permits the personality elements to flow-in and reveal themselves in the responses) is difficult and subjective. They have been, however, used specially the Rorschach test for studying individual personality structure and dynamics. Good accounts of these are given by Bell (4) and Cronbach (9). It may be remarked in passing from this reference to individual differences in mental abnormality that personality disturbances are not necessarily a matter of degree or intensification only. It has been found, for example, that at least on the symptoms side the factor of psychotism is independent of that of neuroticism. (Trouton and Maxwell 43) Classifications of the insane and the neurotic give fairly well-defined categories and syndromes which are described in detail in texts of psychiatry and psychopathology.

Many forms of individual differences have been described in the foregoing pages. In fact individual differences are the very order of

nature. In considering some forms of these the attempts made so far to assess them have been briefly indicated. Differences whether qualitative or quantitative have to be subjected to certain statistical 'treatments' leading to telling the results in probabilistic terms. These methods have also been briefly surveyed. It should now be clear to the reader that individual differences are, as a group phenomenon, productive of scientific discovery, and as case 'stigmata' are characteristic of supreme importance in the task of ameliorative procedures. The student of psychology is inevitably and deeply concerned with them in all their bearings on the human mind.

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The Concise Oxford Dictionary informs us that the term intelligence means 'intellect' and 'understanding'. Intelligence is generally guessed from the way a person appears to understand a fact or a group of facts, and the manner in which he responds to those facts. Supposing two children A and B, of the same age and locality see a horse. If A understands *more* than the other, this would indicate that he is more intelligent than B. If A sees just a horse, but B also knows that it is a riding-horse, or a pack-horse; the additional facts of his understanding would go to show that he is more intelligent than A. Let us take another example. On seeing a railway-engine, one boy may know it as a Diesel, electric or steam engine; or he may be able to know that the given engine is used for a long-distance mail train, or as a short-distance shunting engine: the person that knows more of the given object's qualities and functions, and its relations with other objects, would show a better-developed or superior intelligence. In the same way, when we are dealing with complex facts, or complex relations among facts the comprehension of the given situation, as well as the character of the response to the total situation, would express our intelligence.

Intelligence has been considered by ancient thinkers as a process of abstraction, or a faculty. Its most common expression was noted in the exercise of the individual's reasoning. Man as a rational being was believed to be endowed with intelligence. He could reason out the pros and cons of a given situation, and would be held responsible for his behaviour in relation to that situation. Lower animals meet their various problems of living through instinctive activities. But man can use his reason, and the quality of his reasoning indicates his intelligence. If the conclusions drawn by him happen to be wrong, it would express not only a defect of reasoning but also point to a lack of intelligence. From this point of view intelligence is eminently analytic and discursive. It is interested in distinctions, it is keen to note differences, and is alert to judge objects and events as similar or different, as fit or unfit. (*Vivek-atmika buddhih*).

Traditions of every country are full of anecdotes in which more or less complex riddles are asked to test the standard of intelligence in an individual, or to determine his fitness for an important task. There is the ancient tradition about the riddle of the Sphinx: the animal that is known to walk at first on four legs, later on two legs,

and lastly on three legs. Indian-tradition is also full of such tests : the *swayamwara* contest for the hand of Draupadi in the *Mahabharata* is a well-known example of the test of skill in archery. In later times, we have the behaviour of the prince, who saved his country's honour by bringing out a waxen lion from its iron cage without damaging the said cage. When all the honoured ministers pleaded their inability, the little prince applied the heated end of an iron rod to melt the wax, and thus he was able to take the said wax-lion out without damaging the cage. In the former case, Arjuna was trying his skill in marksmanship upon a new and complicated target; in the latter case, prince Ashoka was applying the knowledge that 'heat melts wax', to the solution of a new and puzzling problem.

We may note that it is always some activity that is judged as intelligent or otherwise. Hence, the aspects of practical success and failure do play an important role in judging intelligence. Intelligent behaviour is divided into two categories—theoretical and practical, *abstract* and *concrete*. A literary scholar, or a philosopher illustrates the type of theoretical intelligence; a mechanic or a manual worker indicates by his performance practical intelligence. The scholar and the philosopher are usually engaged in dealing with ideas, and images, which appear as abstractions from the facts of practical experience. The fancies of the poet and the novelist are extracted from the world of experience. The hypotheses and theories of the philosopher are also derived from the hard realities of everyday life. When the philosopher thinks over the ambitions and conflicts of ordinary men, he is taking out the essential type of man's basic aspirations, fears and frustrations. But while discussing these ultimate problems, he seems to be busy with his own ideas and thinking. So this type of mental activity is described as an illustration of abstract intelligence. On the other hand, the manual worker or mechanic is not only dealing with concrete objects, like wood and iron, cotton and wool, wheat and vegetables; but he is also eminently active in bringing about changes in their shapes and usefulness, which every one can see and touch and feel. The success of these practical efforts points to the quality and quantity of the given worker's or artisan's concrete intelligence. The beauty and durability of the Taj Mahal is a tribute to the eminence of the concrete intelligence of its designers and architects. The fast flying aeroplane, and the slow hand-driven wheel-barrow, both of them exhibit different degrees of concrete intelligence. In brief, the intelligence that deals with symbols and ideas is abstract intelligence; and the intelligence that is occupied with objects and things is concrete intelligence. Nowadays another type of intelligence has been mentioned by certain psychologists and that is *social intelligence*, or social tact which can be seen in the behaviour of political leaders, business-men and religious reformers. Social intelligence is found in successful social adjustments; and hence this is also a kind of practical intelligence in the field of social relations.

In many human activities all the three aspects of intelligence—abstract, concrete and social—are found. The building of a house, the working of a factory, or the progress of a social uplift movement, each of these has aspects theoretical, practical as well as social. The building of a house assumes the ideas and purposes of the owners, the theoretical information about the qualities of materials, the suitability of the designs for the given climate, and the conformity to the social forms of living and approved standards of beauty in that locality. However, it is also to be admitted that in some activities one or other of these three aspects is more pre-dominant. And it is simple as well as convenient to describe those activities by reference to the pre-dominant aspect. It is in this sense alone, that we have some justification in calling the cogitations of the thinker as expressing abstract intelligence, and describing the manipulations of the mechanic as showing concrete intelligence and pointing to the propagandist activities of political leaders as activities of social intelligence.

In the early days of philosophical enquiry, the term intelligence was mostly considered from the narrower point of view of 'abstract intelligence'. The early studies of 'intelligence' by scientific psychologists in this century were also concerned with operations of abstract intelligence, or performances of the 'higher mental processes'. To speculative philosophers, it was the process of thinking or reasoning that appeared as the acme of intelligence. Aristotle defined man as the *rational* animal. The Mediaeval European thinkers endowed man alone with the soul, and prescribed reasoning or intellect as his special differentia. The accuracy of reasoning seems to depend largely upon logical consistency, and the memory for facts included in the given premises. It is the clearness of one's logical thinking that will determine the inference of a universal conclusion from given universal premises. For example : If it is given that 'all men are animals', and 'all animals are mortal'; then it can be correctly inferred that 'all men are mortal'. Any inability to draw the right conclusion would indicate some deficiency in intelligence. Again, if it is given that 'all mangoes are fruits', and 'all mangoes are sweet'; and it is concluded that 'all fruits are sweet'; then it would be a false inference and betray some defect of intelligence. The defect may be found in the incorrect character of the inference, a defect of abstract intelligence in its falling into the fallacy of 'undistributed middle'; or the defect may be discovered in the proposition that 'all mangoes are sweet'. It is our memory of the past experience that can correct the said statement : it is only an inefficient memory that could admit the fact that 'all mangoes are sweet'. Experience shows that while 'some mangoes are sweet', the fact is that 'all mangoes are not sweet'. Thus an individual's intelligence could be compared with another's in his ability for logical consistency, or in the durability and accuracy of his memories.

We find that the ability for reasoning is intimately connected with remembering. In the same way we find that the memory of an

individual is intimately dependent upon his observation. It is the accuracy and detail of one's observation that will effect the usefulness of one's memories. It is only your observation of the relations between two facts, P and Q, that can be recalled on later occasions. If P is older, taller, or fatter, but you did not carefully observe the same, your memory also will be equally defective in comparing P with Q. If you have not observed the weight of a quilt, you may give a wrong estimate of the weight of a woollen blanket when comparing the two. If you have not carefully observed the size of one room, you may misjudge the size of another when comparing the two. In short any activity of memory in connecting, comparing or contrasting different facts depends for its success on the accuracy of observation of given facts which is an activity of intelligence. Thus it would be possible to compare the intelligence of different persons on the bases of the acuteness of their sense-organs, the speed or reaction-time of their observations, and the width or grasp of the details within their experiences. A large number of attempts have been made by various scientists all over the world to find and assess an individual's intelligence along one or more of the afore-mentioned lines.

It may be added that the success of an individual's activities is not entirely determined by his intelligence. Success in life depends also, to a considerable extent, upon one's industry and persistence, the control over emotions and the levels of aspiration, the regard for the approval and criticism of one's contemporaries, the accidents of cooperation and conflict with one's colleagues, and the opportunities offered by physical and social environments.

The fore-going remarks will enable us to follow some of the definitions or descriptions of intelligence provided in an international symposium on intelligence published in 1921 (5). Peterson expressed the opinion that intelligence was a biological mechanism by which the effects of a complex of stimuli are brought together and given a somewhat unified effect in behaviour. Woodworth partly agreed by saying that an intelligent person had to see the point of the problem before him, and he had to adapt what he had learned to that novel situation. Buckingham stressed only the aspect of learning, while Colvin emphasized that intelligence was best revealed in what the individual had learned or could learn to adjust to his environment. Terman held that a person was intelligent in proportion to his ability to carry on abstract thinking. Thorndike also said that intelligence in general was the power of good responses from the point of view of truth or fact.

We may add that the utility of any learning lies in its application to more or less new situations ; and this aspect was also noted by some earlier psychologists. For instance, Stern took the view that intelligence was a general capacity of the person to adjust his thinking to new requirements. He also stated that any sort of attentive, memorial or perceptive activity was intelligent, if it was a new

adjustment to new demands. In the same vein, Wells had described intelligence as the property of so recombining our behaviour patterns as to act better in novel situations. We may also note that some later scholars have underlined the aspects of abstract thinking and of practical usefulness. Thurstone (12) has considered intelligence as a movement from trial and error behaviour in a complex problematic situation towards increasing abstract controls, through the use of ideas and symbols or words. Freeman (3) has concluded that intellectual traits involve capacities such as quickness of learning and of apprehension, as well as the ability to solve new problems and perform tasks of intellectual difficulty. All of these tasks involve ingenuity, originality, the grasp of complicated relationship, or the recognition of remote associations. It seems that intelligence is best revealed in the capacity to learn and the ability to apply our learning to the solution of complex problems.

We find that the various attempts at the measurement of an individual's intelligence are based upon some point of view of the nature of an intelligent activity. Indeed, it is the character of one's performance in a given task that can be considered as an index of his intelligence. Thus a number of testing techniques have developed along scientific lines during the 20th century. (See Ch. 12).

Growth of Intelligence

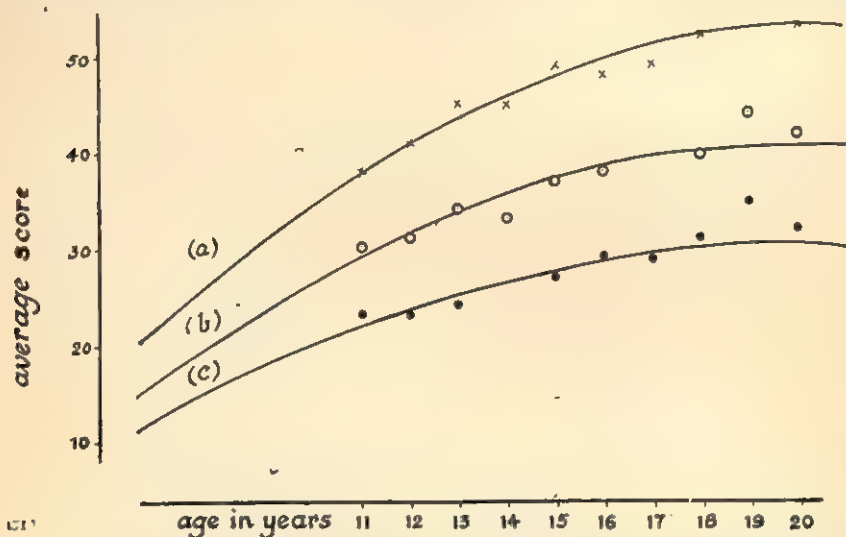
It is an obvious fact that men differ from one another in various dimensions, like height, weight and colour of the skin. They also show different degrees of intelligence in their performances. Just as individuals differ in intelligence from each other, in the same way we can see that the same individual seems to show different abilities during his growth from childhood onwards. A child can perform only simple tasks. His ability to understand and use language, his interests and skills in dealing with his environment are also limited in comparison with what he does in his youth and afterwards. With the development of suitable measurement-techniques, it is becoming increasingly definite that in certain measurable abilities the average child grows from year to year. The nature of the growth of a child's physical or bodily abilities has its characteristic rhythm and cycle. The growth of intelligence also has its own manner. It appears that there is rapid growth in the early stages. But this rate of growth is gradually reduced as the child grows older. Such a growth is typically described by a progressively decelerated curve. Usually the average scores of children reach a point where they seem to remain steady for some years, and then they begin to decline. In one of our early studies with 1403 high school students, the average scores on a test battery of general mental ability indicated a somewhat irregular rise up to 17 years, whence they continued steady (4).

Age :	11	12	13	14	15	16	17	18	19
Ave.									
Score :	81	88	103	108	115	126	143	144	142

It is also well-known that the inferior individual progresses at a lower rate and reaches ultimately a lower level of intelligence than the average, and that the superior person progresses at a faster rate and reaches a higher level. This fact has also been corroborated from studies with tests of intelligence. While tests of infancy are not quite reliable, fairly consistent trends are found in the abilities of children from 3 years onwards. Tests with school-going children also show similar trends, if we consider the scores of the 75th and 25th percentile individuals, we may note that the former score more than 74% of the group of his age, and the latter does better than 24% of the said group. In an omnibus spiral test in Hindi (No. 34-55) tried at the Banaras Hindu University, the results were as follows :—

Age :	11	12	13	14	15	16	17	18	19	20
75% :	38	41	45	45	49	48	49	52	44	53
50% :	30	31	34	33	37	38	39	40	35	42
25% :	23	23	24	25	27	29	29	31	26	32

It will be readily seen that in ten years, where the superior person appears to progress by 14 points, from 38 to 52 points,



Growth Curves of (a) Superior, (b) Average (c) Inferior ability.

Fig. 1

score ; the average, student by 10 points, 30 to 40 ; the inferior progresses by 8 points only from 23 to 31. Here too we find that the progress in test scores seems to reach a maximum by 18 years. Though the number of individuals tested in the various groups are entirely different, yet the trends of growth for the

superior and inferior persons show a remarkable consistency. We can easily overlook the slight irregularities found in the given figures as being due to the variable experimental errors of sampling, etc. We can put the said data in a graph and illustrate the situation by drawing smoothed curves of growth (See Fig. 1). If we assume that these curves start from zero, we could trace the separate curves of the growth for the sub-normal, normal and supernormal individuals. An attempt at such a curve showing growth of intelligence is found in Sandiford (7).

The tests of general intelligence assess the ability of an individual on the basis of the complexity of a task that he can perform. This is sometimes taken to indicate the acuteness of the individual concerned. When it is said that a young man of 20 has the mental age of an average 16 year old, it only means, that both of them have equal range of penetration into the complexity of a problem. However, when it is stated that the average individual's intelligence does not grow beyond 16-18 years, it does not mean that the average man of 20 or 25 does not know anything more than what he knew at 16 or 18 years. It cannot be denied that with his width of experience, he will have a good deal better comprehension of the fields of his activity. But it should be noted that the limit of his penetration or critical appreciation of the various problems in that field of activity will be very much the same as he showed at 18.

In practical life there are certain occupations where the general run of problems are of a limited complexity. The coolie that carries baggage over his head needs a limited intellectual ability to successfully tackle his jobs; similarly, the average farm-hand. He has to deal with problems of very limited complexity, and a very slight range of variability. A boy of 14 years can deal as efficiently with the problems of carrying loads on one's head, as the older experienced coolie of 24, or 34 or more. A farm-hand of 14 is as capable as the older farm-hand in dealing with the common problems of their activity. Since the tasks mentioned above are largely muscular, the tools of the trade are simple; the efficiency of performance needs little intelligence, which an average adolescent boy often shows. This sometimes leads to complicated social problems: The adolescent shows scant respect for age; or he may be loaded with responsibilities of a maturer person. Again a somewhat superior intelligent youth may offer unsympathetic criticism to senior but dull adults, and thus gain notoriety for rebellious and radical behaviour.

We may repeat, that the width of an average man's experience goes on increasing with his age. But the depth of his apprehension remains very much at the level of later adolescence. This theoretical point of view can be graphically expressed on the basis of the hypothetical Intelligence Quotients (I.Q.). We have the diagram in Fig. 2 from Sandiford (7, P. 150), to show horizontal and vertical growth

in intelligence. The basic hypothesis is that for each point of vertical growth of I.Q., there is a practical limit of horizontal growth also.

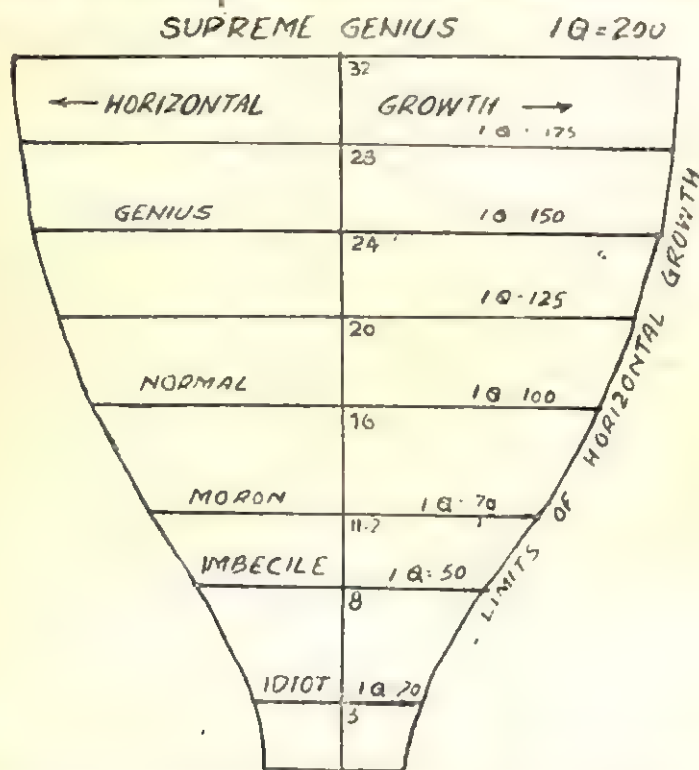


Diagram to show horizontal and vertical growth in intelligence. From morons, imbeciles, and idiots the highest levels achievable are shown. (From Sandiford).

Fig. 2.

Theories of Intelligence

We have discussed earlier the various characteristics and definitions of intelligence. The practical problems of intelligence-testing have laid emphasis upon certain functional aspects of intelligence. For instance, Alfred Binet (1) took the following criteria for the selection of his test-elements and the various items : (i) Intelligence is best displayed by general information and knowledge imbibed from the social atmosphere and geographical location, etc., and it is independent of school-teaching. (ii) The more intelligent individual shows greater initiative and persistence. He is also more careful in observing details, and chalking out a consistent plan of activity. In other words, he has the ability to take and maintain a definite direction in thinking, when faced with problematic situations. (iii) He makes adaptations in order to attain a goal. He varies his behaviour to obtain success. If one way of dealing with a situation is unpromising, he is ready to try another. It is not just flitting

over from one obstacle to another; but it is the rejection of an unsuccessful method, and in the light of experience selection of a more promising approach to the given task. There is a persistency towards the goal with a variation of efforts leading towards a more hopeful adjustment. This behaviour brings out the standard of auto-criticism, or the ability for self-criticism.

On the other hand, E.L. Thorndike, (11) in preparing the famous CAVD battery of tests with problems of Completion, Arithmetic, Vocabulary and Directions, laid greater stress upon the degree of difficulty that a person could reach in the performance of mental tests. He expected to determine in this way the level or altitude. He also emphasized the range of such tasks, and thus attempted to compare the area of an individual's intelligence. He gave great importance to the speed of performance. It seems that intelligence is exhibited in a variety of tasks. There are many factors in various tasks, and none is to be considered as specially significant or dominant.

Spearman (8) found that the various mental tasks appear to be correlated, and usually positively correlated with each other. This means that high scores or superiority in one mental ability, is more or less related with high scores and superiority in another mental ability. A good mastery over mathematical problems usually indicates a considerable consistency of one's reasoning, and on the other hand inferiority of the former is associated with inferiority of the latter. Spearman also found that the correlation of performance in mental tasks is somewhat negatively related with skills in manual tasks. So he believed that when certain mental tasks have medium or high positive correlations they imply the function of a factor of general intelligence.

Spearman (9) assumed that the correlation between any two abilities a and b , is due to the correlation of a with g (or the general ability) and of b with g . Indeed he held that $r_{ab} = r_{ag} \cdot r_{bg}$. In this way it can be easily proved that if we know the correlations between any given test and any two other tests (r_{1a} and r_{1b}), as well as the inter-correlation between the said two reference-tests (r_{ab}), we could discover the correlation between the given test and general ability (r_{1g}). e.g.

$$\frac{r_{1a} \cdot r_{1b}}{r_{ab}} = \frac{(r_{1g} \times r_{ag}) (r_{1g} \times r_{bg})}{r_{ag} \cdot r_{bg}} = \frac{r_{1g}^2 \cdot r_{ag} \cdot r_{bg}}{r_{ag} \cdot r_{bg}} = r_{1g}^2$$

From the same hypothesis follows another observation, that if we have four abilities or test performances such that the tetrad-difference of their correlations ($r_{ab} \cdot r_{cd} - r_{ad} \cdot r_{bc}$) is equal to zero or nearly so, we could analyse each of the said performances into a common general factor or g , and a specific factor or s which would be different in quality and quantity for each of the said abilities a, b, c and d .

When we have a large number of tests in a test-battery, usually a judicious change of items, and a careful pruning of the elements could give us a 'purified' battery with test-abilities that could be described in terms of two factors, a general g and a specific s . Such a test battery would also have certain other characteristics; for instance, the inter-correlation matrix of the elements in the said battery would show a hierarchical order. To psychologists these early views of Spearman are better known as the two-factor theory. This point, however, must be borne in mind that the common factor of general mental ability is not identified by Spearman with intelligence. Indeed he clearly describes the said factor as 'g' only, which is something like 'a general fund of (physiological) energy in an individual, which operates with a variable efficiency in different test-tasks, because of the varying types of neural engines engaged in them.' However, Spearman is generally regarded as inclined to consider this general mental factor in popular terms, as probably similar to the commonly described character of general intelligence.

Thomson (10) has been keenly interested in the statistical analysis of the results of tests of mental ability. While he admits the possibility of preparing a test-battery, on which the performance can be ascribed to two factors, he, however, contends that in common experience the performance in a number of tests is sure to show a more complex picture. He finds that there may be a small group of tests which contain a common group factor. This implies that the results of statistical analysis point to the existence of many kinds of factors that are responsible for the abilities tested by the various sub-tests collected in a given test of intelligence. In theory, this approach leads to the positing of a multi-factor theory of intelligence. It has received considerable re-inforcement from the studies of L.L. Thurstone (12), and the techniques of multiple factor-analysis, popularised by him and other mathematically oriented psychologists. Indeed during the last twentyfive years, the two-factor theory of intelligence has been steadily losing ground, and the multi-factor theory is being corroborated and refined by the majority of investigations. When a number of factors are obtained, then it is possible to extract a Second Order 'g' among the said factors.

We shall take an illustration from a spiral omnibus type of verbal group test of general mental ability in Hindi (6). It consists of items of (a) Vocabulary-Similars, (b) Vocabulary-Opposites, (c) Number Series, (d) Classification, (e), Best-Answers, (f) Reasoning, and (g) Analogies. The inter-correlation matrix yielded three factors. The loadings on the said three factors were subjected to oblique rotation and the following "Second order general factor plus orthogonal simple structure" was obtained :

	g	I	II	III
A	.615	.121	.422	.100
B	.788	.000	.420	.094

C	·230	·087	·030	·294
D	·711	·025	·308	·109
E	·822	·000	·180	·156
F	·512	·274	·000	·000
G	·610	·103	·140	·092

When we are dealing with actual data, a number of error variables are encountered. Hence, it is customary to disregard all loadings below 0·130. Thus, the above table would give us an easily convincing picture of general, group and specific factors, as are shown in the following table :

	g	I	II	III
A	·615	**	·422	**
B	·788	**	·420	**
C	·230	**	**	·294
D	·711	**	·308	***
E	·822	**	·180	·156
F	·512	·274	**	**
G	·610	**	·140	**

While a general factor is present in varying degrees in all the seven test-elements, the residual factor I has a specific loading on the test-element of 'Reasoning' (F) only. The residual factor II appears to be a verbal group factor having loadings on the two test-elements of Vocabulary (A, B) as well as of Classification (D), Best Answers (E) and Analogies (G). The III residual factor has also loadings on the test-elements of Number Series (C), and Best answers (E). The performance on the selection of 'best answers' is thus a compound of Factors II and III.

To sum up : It may be noted that since the residual factors given in the table above are orthogonal to one another, it can be asserted that the said factors are independent of each other. This point of view has led to the preparation of tests of primary-mental abilities, and has also endorsed the implications of multi factor theory of intelligence. A number of specific abilities are generally recognised nowadays. The most notable being : verbal, numerical, spatial and mechanical. Intelligence may be considered as a single type of function and that may be called a one-factor theory of intelligence. This view seems to be followed by Ebbinghaus in his work with 'sentence completion test'; and in the multimental scale of McCall, that consists of 'classification' items only. This view has also been described as the monarchic point of view. Then, we have the two-factor theory or the diarchic point of view. It asserts that all intelligent activities are constituted of two factors, one 'g' or general, and the other 's' or specific in character to the task

concerned. Lastly, we have the multi-factor or an oligarchic point of view, which assigns intelligence to the functioning of several factors, that act jointly or severally in different tasks.

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Alfred Binet of France is regarded as the father of Measurement of Intelligence. When he was assigned the task of finding out the causes of backwardness among the students of Parisian Municipal schools, he began to look for a method to determine the intelligence of children. He asked some teachers to observe some children who were unfamiliar to them and to discover their intelligence. He found that the teachers used very different methods for eliciting information from the given children. One of them wanted to know the purposes of canals and sluices; another asked for comments and interpretations of some pictures; a third enquired about details regarding the reports of the recent funeral of King Edward VII; while a fourth asked for the names of neighbourhood streets, or the shortest path to the railway station. Another wanted to know whether factory walls should be thick or thin. In short, the basic method was to ask for information that was not available in school text-books, but which could be picked up from the neighbourhood, or through observation and understanding of contemporary events. Binet is reported to have remarked that the teachers were using a very excellent method in a very awkward way (39). The method was excellent as it probed into the habits of observation, reasoning, remembering and the development of intelligent curiosity. But the method was very awkward, as one could not compare the different types of replies and assess the relative merits of various individuals. Thus Binet decided to refine the teachers' techniques by elaborating and standardizing the procedures for asking information and for measuring the worth of given answers.

Binet had assumed three characteristics of intelligent activities : the ability to take and maintain a definite direction in thinking, to adapt one's behaviour in order to attain a goal; and the capacity for self-criticism (39). Indeed in some of his non-verbal items, one can find an activity with all the given characteristics. This is notably so in the "Plan for search items" (XIII years) (44). But there are several other items of vocabulary, memory and comprehension, which cannot be conveniently approved in the light of the given three criteria. It seems that in practice each attempt to measure intelligence follows the theoretical criteria to some extent, and also incorporates other types of problems that are considered promising in general. In his first attempt, Binet used a set of 30 items. He tested a small number of children with varying school-experiences. This experience convinced him that some increase in the number of

questions asked, and a refinement in measuring the mental age valuations of the given responses could make a reliable tool to classify the backward, and the dull, as well as the bright and the superior children. Binet's methods were taken up with considerable enthusiasm by psychologists in Europe and America. Burt in England modified the technique to deal with groups of school-going children (4). Terman at the Stanford University in America also adopted the Binet technique of measuring intelligence of individual children (61). He also prepared a group test of mental ability (62). These adaptations of the Binet tests and techniques in the English language have been the *proto-types* of the attempts for the measurement of intelligence tests in India. Indeed the wave of psychological testing that started with the work of Binet, moved with some modifications to every country, including India.

The various methods for the measurement of intelligence can be broadly put into the following classes : (i) Tests which are given to one individual at a time, or *individual tests*. The tests devised by Binet were individual tests. Individual tests assume some special training for the tester, who is expected to make specific observations of the general behaviour of the individual tested, or the testee. Such tests are preferred by persons who would like to study an individual intensively to arrive at important facts of psycho-diagnosis. Hence, individual tests are special favourites with medical psychologists, or clinics. (ii) In contrast with the above, we have tests which can be given to a group of individuals at a time, or *group tests*. The written examination of a class in a school is a typical group test. This economises the labour of securing the test-data. It can be simplified so that a person without any specialised training can obtain special type of data from the testees, *e.g.*, A teacher of English can equally efficiently distribute to a group of examinees a paper on Arithmetic, or Algebra, and also collect the answer-books for examination by the expert. In such tests there is a tendency to simplify the techniques of administration, and of scoring. But the results obtained are usually to be interpreted in general terms, and there is always an admitted possibility that a period of close observation of the given testees, as is possible in individual tests, could have yielded more details and reached perhaps more reliable results. Indeed, during the early applications of group tests for the selection of recruits for the American Army in the course of the first World War (1914-18), the psychologists followed the rule of giving individual tests to all those who were judged very superior or very poor on their showing in the group tests. This was done mainly to prevent the chances of deliberate malingering, or cheating. Also, certain groups were given both types of tests, the individual as well as the group tests, to get accurate data upon the relative validity of the two techniques. It was found that there was a very high correlation between the results of the two tests. So, in all situations of large-scale testing, whether in the military, industry or educational

field, the administrators generally prefer the group testing procedures. However, in all doubtful cases, when a person does very well on some tests and very poorly in others, it would be useful to take recourse to the laborious procedures of individual testing and clinical observation.

Both kinds of aforesaid tests for individuals and groups can be further sub-divided on the basis of the performances observed, or the types of the responses considered in the course of testing. Two main divisions follow from the fact that many tests use language in asking questions, or expect the testee to read a given question; while many others observe the skills in the performance of manual tasks. These sub-groups have been described as *verbal tests*, and as *performance tests*. The *verbal tests* are found to be more useful in measuring the ability for comprehending or solving abstract problems and the abilities that require the use of ideas, or concepts. The *performance tests* are more useful in the case of abilities required to deal with space relations, or in meeting with concrete puzzling tasks. The former are also more useful for measuring general information, while the latter are more helpful in finding variations in concrete thinking. Further, although numerical ability is different and distinct from verbal ability, some numerical tasks are often included in most of the verbal tests. This inclusion is based on the hypothesis that numerical tests are measures of abstract ability: They are also known to be highly loaded with general mental ability (58).

Individual Testing

The testing of mental ability began with the effort of Alfred Binet. He prepared a list of 30 questions (in 1905), and gave them to several children of different ages and school records. On this empirical basis he found it possible to allocate simpler items to lower ages, and more complicated items to older age and/or education groups. As his main purpose was to find backwardness due to poor mental ability he attempted to give a suitable credit for *mental age* to items that were successfully passed by a child. For example in the 1908 scale we have the following items:—

- Mental Age (M.A.) 4 years : Know the names of familiar objects
(Key, cup, knife, etc.)
- " " 7 years : Repeat five digits.
- " " 10 years : Construct a sentence in which three
 given words are used (Paris, gutter,
 fortune).

Binet, with the assistance of Simon, prepared a revised scale of intelligence or ability in 1908. Binet's work was cut short through his death in 1911. But his work was enthusiastically taken up by other psychologists in England and America. The work of Terman at the Stanford University in 1916 gained enthusiastic response from all English speaking countries. The Stanford revision of the Binet

tests, gave empirically determined batteries of items for different age groups. This test was eagerly accepted by the clinics, educationists and social reform agencies. It has held an unrivalled sway among individual tests. Hard working enthusiasts have tried to refine its utility by increasing the age range ; and by improving the statistical aspects of the validity of the items, and the reliability of the alternatives prescribed for the various age-groups. Twenty years later a fresh Revision was published with two almost equivalent forms L and M. The details are available in the manual entitled *Mental Testing* by L. M. Terman, and M. Merrill. A further revision was published in 1960, through the labours of Q. McNemar, and his collaborators at Stanford. In the last version, once again we have a single form ; and it is believed to be based on more sound statistical procedures.

D. Wechsler, has been more interested in the problem of adult intelligence, and the prospects of prediction and assistance in mental hospitals, as well as the selection of industrial personnel. He has prepared a battery of verbal tests as well as a battery of non-verbal tests. Thus we can get two measures for each individual : a verbal I. Q. and a non-verbal or performance, I.Q., The test yields a score in points, which can then be converted into mental ages, from tables of norms prepared for the different age-groups from childhood to senior ages, upto 60 years.

This test emphasizes two points of view : (i) the same test items can prove useful throughout a very long age-range ; (ii) point scales should be referred to the age data of the standardization sample, within a very limited range, e.g., 45 to 50 years. This scale has been officially approved by the Bellevue Hospital, so it is popularly described as the Wechsler-Bellevue intelligence Scale (64, a). Many performance tests are also used as individual tests. The most common are *form-boards*. These are also found in the early ages for the Stanford-Binet. The form boards gain in complexity, when they take the form of *wiggly blocs* ; and they become complicated puzzles as in the Healy form-board, or in the Healy Fernold puzzles. The more popular are the Block Design, Pass-along, and cube-construction tests. In each case, the score is obtained on the basis of time taken, and the partial or complete success in dealing with the task. Individual tests also permit the observation of the personal approach to the given problem. The emotional response to frustrating situations is of special clinical interest.

In the case of verbal tests, the various items may be presented in an easy form requiring the *selection* of a given answer out of several alternatives : for example—"The opposite of *black* is (1) red, (2) white, (3) green, (4) day." This *selective* form of items is opposed to the *inventive* one, for example—"The opposite of black is....." In the former case, the scoring can be made cent per cent objective as only one of the alternatives should be correct. Usually, the other alternatives are so arranged as to fall in the category of plausible,

probable and possible answers. In other words, they indicate scope for errors of deeper hues, that could be classified as *good* errors, *bad* errors and *stupidities*. Such a qualitative analysis could be of considerable interest for individual diagnostic purposes. It should be also noted that Burt had criticised the use of inventive type of items on the basis of the difficulty of scoring (4). In India most of the authors of verbal tests have adopted the selective type of items. When the selection is limited to only two alternatives, for example, True-False; Yes-No; then there is a considerable opportunity for guessing. In such cases, the correction for guessing is obtained by subtracting the Number of Wrong Answers from the Number of Right Answers, on the assumption that the Right-Score by chance should be equal to the chance Wrong-Score. When the guess is thus neutralised, the final score is multiplied by two to give it adequate weightage. Thus the score = $2(R - W)$. Sometimes it happens, that the final scores obtained by this formula are negative. To avoid these possibilities it has been suggested that all negative scores be considered as zero scores. An interesting plea is also made for a different formula $(2R - W)$, by giving double weightage to the right scores (21). It is also suggested that by increasing the number of alternatives to 4 or 5, we can effectively reduce the possibilities for guessing (41). Thus, the labour for 'corrected scoring' can also be avoided. In practice, this is the principle that is most commonly followed (11).

Group tests using paper and pencil can also be classified into (a) verbal, and (b) non-verbal tests, those involving diagrams etc. Thus the various kinds of psychological tests can be classified as, (i) Individual verbal, (ii) Individual non-verbal, (iii) Group Verbal, and (iv) Group non-verbal. In each case, the psychological test is a pattern of stimuli, so selected and organized that it obtains responses, which show definite mental characteristics of the person who gives them. In many kinds of these tests, the person tested has to deal with a considerable variety of tasks. Each kind of such task is described as a *sub-test* or a *test-element*, for example, word meanings-similarity classification. Again, each sub-test generally consists of a number of items; thus each test contains a number of items that will occupy the testee for some twenty minutes or so, and thus give a better indication of his true ability. A single item solved in a short time may reveal only a chance expression of success or failure. But when a person is dealing with ten, twenty, or a hundred items, then the degree of his success (or failure) would be relatively much freer from the influence of chance factors, and give a truer estimate.

In individual tests, specially when some task is being performed, for example, assembling blocks into a given design, the *time* for the performance is often noted. In most group tests also the total performance in a given time is usually fixed. There is little doubt that in common mental tasks, the superior individual is usually a faster

individual (14, 32). The time factor gains in importance, when the items or individual tasks are very simple, for example, in a Tapping test, the frequency of taps per minute, emphasizes the time factor, the task being of a simple routine character tapping with a metal pointed pen on a metal surfaced board. Indeed, in such tasks there are no chances of errors, and little recourse to mental processes. Hence, such tasks are eminently described as tests of speed (11). But if the tasks imply a more or less complicated process of some mental function, then they would be tests of *power*; and the purer it is as a test of power the freer it will be from the factor of *speed*. In all tests where some-time limit is employed, there is some element of speed and some dilution of its value as a test of power. Again, practical exigencies impose the need for restricting the time to be used for test performance. Hence, it is suggested that there should be a reasonable allowance of time so that a mental test can be statistically described as 'more a test of power than of speed.' The test-constructors note the time required by the large number of testees to complete all the items of the test, and thus arrive at the reasonable time for a given test (13; 14). Since much of intelligence-testing is done in schools, many intelligence tests are designed for use in a normal school-period.

In the case of verbal group tests, some time is also required for seating the group of testees, distribution of booklets, explanation of examples etc. and for the collection of booklets and/or answer-sheets. Some authors of tests try to present one self-explanatory illustration of the test-tasks or test-elements, and overlook the possibility of confusion or inability to understand on the part of the persons tested. But others put more emphasis upon the necessity of developing a sense of confidence or positive rapport among the testees; and they stress previous practice with examples, explaining one, and supervising the solution of another, as well as explaining all doubts and difficulties before starting the 'test proper.' The former expectation is indicated in the tests for various age-groups used by the Bureau of Psychology, U. P. (3), and the tests prepared by Central Institute of Education (Delhi) (5). The latter consideration is found in the group tests standardised at Banaras Hindu University. In a recent study, groups of examinees were divided into a superior group of top 25%, and an inferior group of bottom 25%. There were no Zero-scores in the elements of the Banaras tests by the superior group, and only 0 to 16% in the inferior group; but it was found that the respective ranges reached 28% in the superior group and were 20% to 96% in the inferior group of the 9th class in the different elements of the aforesaid group tests of Allahabad and Delhi (54). This points to the utility of practice in the assessment of student's performance.

When the various test elements are presented one after the other, the whole test is described as a *battery* of tests. In some battery-type tests, a different time allowance is given for the different elements, for example, the Terman group test of mental ability: The

time here is short, from 2 to 4 minutes. The testee is asked to start on each element, after some directions, and to stop after a short interval. The items are usually put in a graded order of difficulty. So, everytime the testees are asked to 'stop', the poorer candidates, that is about 50%, find that they have not been able to attempt a good proportion of the test. This is bound to give them a shock; and this emotional disturbance goes on accumulating from the first test-element to all successive sub-tests of the given battery. Attempts have been made to avoid this undesirable side-effect in two ways: one, the test-battery is given for the total period of 30 or more minutes. These may be called *modified* test-batteries. This however, leads to confusion about the directions, and a number of sub-tests are left unattempted. Second, different items are combined for all the test-elements, and such tests are best described as the *omnibus* type of tests. In the omnibus type tests, all the directions and examples are explained before starting the group on the 'test proper'. The items are generally arranged according to an empirically determined order of difficulty; but usually two or more items of the same element are not placed in successive positions. This may import a slight theoretical irregularity, but in practice it carries the advantage of presenting a different type of problem after each item and of giving emphasis to the principle of presenting novel situations. In view of the fact that all the different items of these tests are arranged in a more or less fairly graded order of difficulty, these tests are also called *spiral omnibus* type tests. In the last World War (1939-45), such spiral omnibus tests were commonly employed for general classification purposes by the allied armies.

Development of group tests

It is indeed interesting to note the development of group tests in the United States of America. In the early days, we had attempts by Terman in one direction, and by Yerkes in another. Terman used a battery of sub-tests: each sub-test began with two illustrations, a short paragraph of instructions, and a series of items arranged in an order of increasing difficulty (62). Most of the sub-tests were selective in form, and each was scheduled for a short period of 2 to 4 minutes. The tests had different weights for the correct items, though mostly it was one score for each correctly solved item. But in some cases, the number of items in a sub-test being few, each correct item was given a weight of 2 or more marks. This was done to even out each sub-test's importance in contributing to the total score. The total score could also be transformed into mental age in years and months.

Experience with mental testing of High School and junior students showed that average scores usually increase in parallel with age and they stop increasing during late or mid-adolescence. Hence, Yerkes thought that in dealing with the adults, we are not justified in converting intelligence-test scores into mental ages. So he obtained

scores in points and tried to prepare a scale that would show the relative merits of individuals on the basis of their point scores. So his test was described as a point scale (67). This practice soon led to the development of *percentile norms*, either along with, or instead of age-norms. The percentile norms indicate the position of any given individual within a large group, although the interval between the deciles is not uniform: a percentile rank of 50 means that he is better than 50%; and a percentile rank of 75 means that the given person is better than 75% of the group (used as the standardisation sample). The percentile norms appeared in the Henmon-Nelson Tests of Mental Ability (13).

The Army Group Intelligence Examination Alpha looked very much like the Terman's battery of tests. It consisted of 5 forms, each with 8 sub-tests. But the scoring was like the point scale, and the individuals were judged according to percentile ranks. After the first World War there was an attempt to revise its forms for use with the civilian population, by rejecting special army items. Forms were reduced to three; oral directions were also revised and the test modified into a self-administering type. While the Terman tests were for a rather restricted age range, the modified forms of the Army tests were used for quite a large range of age in years: 8 to 25 years (63; 26). However, it was found to be best suited to the age range of 9 to 17 years. A slight change is to be found in the National Intelligence tests which put great emphasis on "fore-exercises" which at times run to about half the length of the given test. This modification was criticised on the grounds that (i) undue practice may indicate more of adaptiveness than general ability, and (ii) that this reduces the time devoted to testing. However the need for adequate 'practice exercises' became an established practice of psychological testing. A far reaching change is found in the Henmon-Nelson Tests of Mental Ability which are organized on the 'spiral omnibus' plan (13; 29).

It may be noted that in some sub-tests the items had only two choices, for example, True-False; Same-Opposite. As these tests were susceptible to considerable guessing, a correction for guessing had to be worked out. But some sub-tests had 3 alternatives, and others 4 or more. In short, there was little uniformity of choice among the multiple-choice inventive type tests; and a number of corrective calculations were called for. Otis decided that a 5-choice item does not need any correction for guessing, and he prepared all items of his Quick-scoring Mental Ability Tests as 5-choice items (41; 6) and later workers have generally followed this lead. Otis also improved the format of his tests: He got printed besides each of the items, rows of 1, 2, 3, 4, 5 inscribed in small circles on the right hand margin. He asked the testees to mark the circle containing the number of the correct alternative. Thus a cut-out stencil could be easily used for quick scoring. A variety of stencils have been

used by other workers. Another interesting modification is seen in the Clapp Young Self-Marking Device: This consists of a carbon-back surface of the test-page with squares printed under the correct answer numbers. Thus by a mere look at the lower sheet, one could easily count the correct scores. The use of sets of vertical dotted lines, in the place of circles or squares, and the obligation to use special thick black lead marking pencils, as well as the machine-scoring of the given answers through the use of photo-sensitive cells connected with appropriately invented calculating machines are more matters of technical development than of psychological modification.

Another notable psychological advance is found in the Pintner General Ability Tests: Verbal Series. This test yielded a total or *global* score, as well as a profile score for the 8 sub-tests employed (1). Profile scoring has been preferred by the Thurstones in the American Council on Education Psychological Examination for College Freshmen (1). They have preferred to get only two kinds of scores from 6 sub-tests, by using three sub-test scores to find out Q or Quantitative ability; and the other three for bringing out L or Language ability. This tendency is also found in the Ohio State University Psychological test (1), as well as in many others. The profile-scores are assumed to be more useful for psycho-diagnostic purposes.

Here, we may recall the early attempts of Thorndike at Columbia to prepare the well-known CAVD Test Battery, consisting of series of Completion, Arithmetic, Vocabulary and Directions items (1). He believed in the multi-factor point of view about intelligence. Long afterwards Thurstone at Chicago undertook a long and laborious study of 54 different types of sub-tests, usually used in various batteries of psychological tests of mental ability. He took the results of 240 college students, and obtained 1431 inter-correlations. Then he analysed them into 16 independent factors. Later, on the basis of his studies, he tried to prepare pure tests of eleven *primary abilities*. However, later workers have reported that the tests of so-called primary mental abilities have little, if any, superiority in predicting college success, and that it is only slightly superior in discriminative and prognostic value. These studies have pioneered the practice of *factor-analysis* of the sub-tests used in various psychological test batteries, and thus of obtaining a more useful appreciation of the purposes and uses for the given test-batteries. Further, it has indirectly popularised the view that there are a large number of more or less independent psychological factors.

Nowadays we find important procedures of adult-testing either for special abilities or complex tasks; for example, Army General Classification Test, Wonderlic Personnel Test, etc. These tests do not consider age-norms, but they only try to compare the relative development of an individual with reference to a specific group. On

the other hand, there are also attempts to produce short *screening* tests, to reject the sub-standard applicants for particular jobs; or to select the most probable mentally deficient persons for a more careful clinical diagnosis in due course: e.g. the Short Employment tests by Bennet & Gelink; the Cornell Index, etc.

Testing in India

In India, the earliest attempts were in the form of adaptation of Binet type individual tests. There were attempts by scholars at Madras, Dacca, and Lahore. The Madras study contained items in Tamil, and a brief report is available (33). The Dacca version of the Binet test in Bengali was published as a University Bulletin in 1925, but no reports of its detailed working are available (42). The Lahore version was prepared by C.H. Rice, in 1924; the verbal questions were framed in Hindustani, Panjabi equivalents were also given. Rice tested 929 school boys of V to XVI years age. His test contains 9 non-verbal and 26 verbal items. He has given working norms; and after elaborate comparisons has determined that 'depressed class boys' were not significantly inferior to other groups (50; 149-192). This Hindustani-Binet Performance Point Scale won the reputation of being the best scientific attempt. Although most training colleges used to keep the test materials of Rice's scale not much actual testing was done. It seems that "all these studies remain isolated adventures, which have had little or no repercussions on our general academic life (20; 199)". Maiti reported results of Stanford Adult Test upon Bengali post-graduates (31; 214-233). A contemporary interest in group tests was to be seen in the work of Manry at Allahabad, G.C. Chatterjee at Lahore (6; 74-79). However the scientific aspects of these studies were not published. At about the same time many other workers were spurred on to try group tests, but most of their studies are available only in the form of preliminary reports. Detailed statistical reports are met with in the studies by Mahalanobis (30); and this becomes the fore-runner of later reports, where some statistical procedures are tried and some interesting aspects of the given group tests are recorded. Jha prepared a Hindi adaptation of Simplex Mental Test by C.A. Richardson and reported findings in terms of the available American norms (22 : 26-29). Terman's Group test was also rendered into Hindi, and the norms also borrowed from the American manual of the said test. A somewhat more scientific attempt was made by Jalota at Lahore (1934), in combining a number of elements from Burt's and Terman's tests along 'with some elements of his own, into a 9-element' test-battery. The selected items in English were also translated into Hindi and Urdu. The English version was given to a large number of High School and college students (969); the Hindi and Urdu versions were given on a large-scale (1407). The results were utilised for preparing norms for Indian students (16; 35-37) and also for comparing the efficiency of school and college

students when tested in different media of examinations (17 ; 29-39). R.R. Kumria has also conducted some group tests in Urdu. He tested some 868 students from schools of Lahore, Sialkot and Gujrat: but detailed results of norms have not been worked out (27 ; 88-105).

During the last Great War, when the Indian armies were expanded at a rapid pace, some Indian psychologists were associated with the Directorate of Personnel Selection as well as the Employment Selection Bureau of the Home Deptt., Govt. of India. On their going back to their educational institutions, they did a considerable work in the standardization of group tests of general ability in Indian languages. A notable contribution is the work of Dr. Sohan Lal at Allahabad in 1941. He tested 1419 students of different school classes from a representative sample of students of Uttar Pradesh. On the basis of his data, he published norms for intelligence tests in Hindi, and achievement tests in English and Arithmetic. These tests were modelled on Moray House Tests (Edinburgh). He has reported interesting comparisons among the average intelligence-scores of various caste and religious groups, and discussed the significance of these differences on the basis of 'critical ratios in sigma units' ($CR\sigma$) (57). Soon afterwards Dr. Sohan Lal was appointed the Director, Bureau of psychology (Uttar Pradesh), and he started the development of standardised tests for certain age-groups; for example, BPT-7 for age 13; BPT-8 for age 14; etc. These are modified battery-type tests, and contain a large number of test-elements (18 in BPT-7). In some cases, the same test-elements are repeated in the earlier part and in the later parts of the test-booklet. It appears that the earlier element consists of simple classification or code items; and the later has more complex items. A number of different elements are included in the test-booklets for the different mental-age years. It seems that the said booklets have been compiled on an *ad hoc* basis, and working norms have been prepared for practical guidance to the middle-school leavers. Critical follow-up studies, or revisions of the earlier empirical norms are not reported (65 ; 22-23). In one case, an item-analysis has been carried out and marked skewness is reported; the results are rationalised on their utility for selection of superior scholars (3 ; 20). All these tests are scheduled for a working time of 45 minutes.

During this period a number of studies were also carried out in the Calcutta University, and a number of tests were standardised in Bengali (51), Gujarati (40) and Hindi (47). This work was inspired by the encouragement of Dr. Gopeswar Pal. These tests are similar to modified battery type tests as those standardised at Allahabad. A number of spiral omnibus type tests of general mental ability were standardized at the Banaras Hindu University under the guidance of the present writer. In 1951, a test for Hindi knowing students was standardized on the basis of data from 1341 students of high school and colleges by Pande (59). These tests differ

from the Allahabad tests in being used for a wide range of age and class groups. In view of many possible chance errors operating in psychological testing, a person securing 90 to 110 marks is put in the average class, when the average score is 100 for a given age-group. Thus a student of 12 years, even if he secures 90 or 110, would be considered within the average group. But 10 points should mean a difference of 12 months or so in his mental age. It is simple to agree that the test is suitable for the 12 year group, could also be used without much error to persons of 11 and 13 years. Thus a range of three or four years' mental age is theoretically available for such group-tests; and this adds to the practical utility of the given tool of assessment. A number of similar spiral omnibus type verbal group tests of ability have been standardised in Malayalam (46) Panjabi (55) and Nepali (43). They have also been standardized in Kannada and English in Mysore (10, 29, 36).

We often feel that the age-data available in school records is not quite correct. It has been remarked, "Whereas nature tends to distribute the births almost uniformly over the twelve months of the year, parents distort the uniformity by choosing mostly either July (when the school session starts) or January (when the new year begins) as the most convenient month for declaring the age of their wards (3)". Hence, we think that the "age-norms" are as unreliable as the age-data. However, class-norms cannot easily be accepted as norms of general mental ability. So a combination of the two in the *modal-age for grade* norms has been suggested as a way out for all those used to the concept of mental age (18). Indeed the basic figures for preparing modal-age-grade norms, rise in a regular manner in parallel with the grade or class-norms. In one recent study with a verbal group test of mental ability in Panjabi the following results were obtained (56) :

Class data				Modal age grade data			
Class	N.	M.	S.D.	Modal age	N.	M.	S.D.
VI	263	20.17	8.87	12 yrs.	109	20.35	8.70
VII	300	26.55	10.81	13 yrs.	106	27.57	11.27
VIII	600	35.11	11.88	14 yrs.	200	34.18	11.25
IX	400	43.20	12.35	15 yrs.	107	43.36	10.15
X	600	45.35	11.75	16 yrs.	198	45.21	11.36

It has been also found that the different sub-tests have a varying discrimination ability, and they could be classified into test-elements with high (above 30%), medium (20 to 30%), or low (below 20%) discrimination value among high and low-scoring groups on the total test (15). But if we have an average-ability group (like B. Ed. students), the relative discrimination co-efficient found therein may change, when the same test is given to a superior selected groups

(Engineering college students). Tandon has reported in the case of 'number series' a change from 51.33 to 19.10%; and in the case of 'analogies' a change from 25.11 to 29.19% respectively (64; 117-118).

Joshi has found that an increased allowance of time is more favourable to the inferior group than to the superior group (23;29). He has also reported significant differences between the average scores of urban and rural boys, and between Brahmin and Kshatriya or Vaisya boys (24; 616,607). The Brahmin boys of Banaras and Almorah schools obtain lower scores on a Hindi spiral omnibus test at .05 level of significance. The urban boys do better than the rural boys, and the difference is significant at .01 level. However, Singh has not found any significant difference between the scores of 700 rural students on a Panjabi test (55).

Mohsin has reported useful studies of school students at Patna (37;97-105). Later, he prepared a battery in Hindi : 20 items of Best Answers (5 minutes); 30 items of Classification (5 mts.); 40 items of Analogies (8 mts.); 22 items of Logical Selection (8 mts.); 26 items of Sentence Completion (7 mts.); and 28 items of Reasoning (10 mts.). It has been correlated with Menzel GIT (Non-Verbal), and Raven's Progressive Matrices, the correlation being .54 and .56 respectively. He has preferred the use of an Index of Brightness to the calculation of Intelligence Quotients (38;16).

Mrs. R. Kakka tested 1000 twelve year old students of class VI and above from 34 Anglo-Hindustani Schools of Lucknow, Cawnpore and Allahabad during 1943-44 (25; 141-148). She found that Brahmin students had the highest average score, and also the highest standard deviation (16.09). She found a CR. of 2.28, between mean I. Q. for Boys and Girls. There were 907 boys and only 93 girls, and the boys average I. Q. was 3.37 points higher. Jalota had much earlier reported insignificant differences in 7 out of 9 sub-tests for 1st year college boys and girls. (19;100-104)

A non-verbal group 'general test of intelligence' was tried by Menzel, at Raipur (M. P.). He found it necessary to develop a Hindi Verbal Supplement to this General Intelligence Test at Bisrampur (C. P.) (34). He thinks that the GIT "should also include, especially for those pupils who have been in middle school for a year or more,.....at least some verbal items....." This verbal supplement "may be expected to be more accurate in predicting school success than the non-verbal" test. These tests are batteries of 5 and 4 parts respectively. In the latter, 25 tangled sentences are to be tried in 5 minutes; 25 selective type analogies are to be solved in 2½ minutes; and 13 4 minutes; 25 opposites are to be selected in 2½ minutes. A useful study in Arithmetical problems to be solved in 12 minutes. A useful study in Gujarati is the group verbal test by Desai (9; 118-133). Another in English is with 599 students from Mysore by Lalithamba (28;11-22). She reports superiority of boys' mean score in all the three

years of the high school at .01 level. She found a positive relationship between the economic status of the fathers and the intelligence of their children. She also found that the average chronological age of the student increases from the highest socio-economic status to the lowest socio-economic status. A Marathi version of Northumberland Mental Test-2 for groups has been adapted by Samarth (36).

Non-Verbal Tests

Bose has reported age norms for Raven's Coloured Matrices Test (49). Rath has reported a study with Raven's progressive matrices on 425 graduates and 345 undergraduates at Cuttack. He found a correlation significant at .01 level with a verbal intelligence test, and with examination marks in Arithmetic (48; 536). The Revised order-1956 version of the progressive matrices test has been applied to secondary school going children in Gujarat by Desai, and different norms for 13 to 17 have been obtained. (8)

Mehta has re-standardised the Revised Minnesota Paper Form Board series M-A. on 541 boys of the final class of ten High Schools of Bombay City (36). Chothia has also obtained norms for this test on small groups of engineering and arts students at Bombay. In a study of engineering applicants at the V. J. Tech. Inst., Bombay (1951), three tests were given : DAT Abstract Reasoning, Bennet Mechanical comprehension and Revised Minnesota Paper Form Board. The test scores were correlated with the first year final examination marks, and it was found that these tests were better predictors than the usual entrance examinations (66).

Under Menzel's advice, since 1949, St. Christopher's Training College, Madras, prepared a group test of General Intelligence (in English) Senior Level, for ages 13-16 ; and a Madras Non-Verbal Test for General Intelligence, Junior Level, for ages 9-13 (33). Tandon obtained norms for college adults (603 cases) on the Revised Minnesota Paper Form-board Series-AA (61). The test was modified for use with separate answer-sheets (64).

Datta reported some preliminary studies on drawings of children (7). These are similar to the 'draw-a-man' test proposed by Goodenough. Large-scale data with school children was published by Menzel (35). He did find differences in favour of boys at some ages, and in favour of girls at others. Pathak published a new scoring scale for this test based on studies in Baroda and Poona (44 ; 41-60), and applied it to children of 6 to 10 years in Gujarat (45 ; 45-54).

Individual tests in Marathi and Kanarese were prepared by Kamat. He found that boys scored better than girls at all ages (26). These were versions of the Binet-tests and standardized for the said language groups at Surat (1074 individuals of ages from 2 to adult

age.) He held that these tests did not need any modification. Large-scale data was also obtained at Allahabad for a Hindi version of the Stanford-Binet revised scale form L (1937) (36). These L and M forms were also adapted in Bengali, and norms obtained (49). Uday Shankar developed a Hindi form and tested 1250 school children of Delhi and obtained norms for ages of 3 to 11 years (53). Adaptations of the Bellevue Wechsler Scales (Forms I and II) were also carried out by the Department of Psychology, Calcutta (49). Norms for local population were obtained for non-verbal individual tests, for example, Pass-along, Dearborn Form Board, and Koh's Block design performance tests, at Calcutta, Mysore and Patna ; sometimes for selected populations from small samples.

A notable contribution was the standardisation of a battery of individual performance tests by Bhatia (2). It consists of Koh's Block Designs : Alexander's pass-along ; Pattern drawing ; Immediate memory for numbers and letters ; and a Picture assembly test. Norms are available for ages 11+. A factor analysis has revealed two orthogonal factors. The battery was standardised upon 642 literates, and 512 illiterates. It has been validated also. There are a number of other equally interesting but unreported studies from other Universities and Bureaus. Indeed "here we have the two currents of endeavour from professional educationists and academic psychologists merging together in increasing the 'heap' of observations." But "many times it appears that we are more interested in collecting data than in suggesting fresh hypotheses" (20 ; 199).

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Need of Educational Measurement and Evaluation : The measurement and evaluation point of view is quite in keeping with our changing philosophy and psychology of education. Modern education requires that each pupil be given the opportunity to advance as fast as he can or as slowly as he must. Education is a continuous process in which the teacher guides the progress of his pupil at every stage after ascertaining the rate, direction, and extent of previous development. Having accepted the directive educational principle that maximum growth of each student is to be secured according to his individual needs and capacities, periodic measures of each child's abilities, levels of readiness and previous attainments and speed become obligatory. Only when we measure and know his progress and potential are we in a strategic position to guide his advance along the road to the desired educational goals.

In the case of a given child what techniques of teaching are likely to be most effective? What strong and weak points of his require individual attention and special consideration in planning his educational course? Under the present guidance and teaching, is his progress accelerated or retarded? In which directions? Only the results of a well-made examination and a sound evaluation programme can provide adequate answers to these questions.

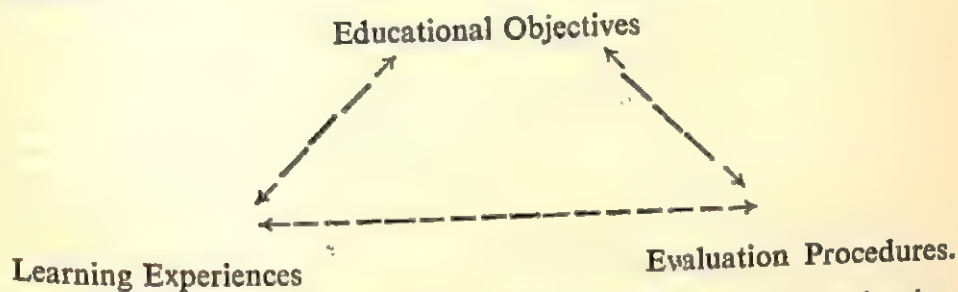
Sometimes, a distinction is made between mere measurement and proper evaluation, in that, whereas the former suggests only a precise quantitative marking of the outcomes of teaching, the latter implies a broader, more inclusive and continuing process of assessment of student growth. Evaluation is a basic and an integral part of the whole educative act, designed to improve teaching and learning, as well as, to measure student achievement.

Evaluation and Educational Objectives: Evaluation is a basic task of education and its aim is to determine the extent to which the diverse course objectives are being attained. Education is a process of changing behaviour patterns of human beings and evaluation procedures try to determine the effectiveness of the educational course in bringing about such desired changes.

The whole educational process should be informed by a proper evaluation point of view. It fosters an objective, critical and creative approach to problems of teaching. The teacher has to plan his

teaching work in the light of the kind of behaviour he wishes to bring about in his pupils, as a result of his teaching. He cannot self-complacently presume that he has done his duty, when he has covered a certain prescribed portion in the class. He has to ask himself constantly 'what behaviour changes can I bring through this unit of instruction ! Such desirable changes in student behaviour concretely define his educational goals and objectives. An educational objective is a planned-for change sought through educational activity.

Learning situations are planned to bring about the intended behavioural changes in children. The effectiveness of learning experiences can be assessed only in terms of the change and development taking place in children as a result of their classroom experiences. Thus, evaluation is process of determining the extent to which an educational objective is being accomplished. There is an intimate interrelatedness between objectives which are the ends of the educative act, learning experiences which are the means thereto, and evaluation which provides evidence that objectives are being reached through learning experiences. Objectives occupy a central and pivotal position with respect to both learning experiences and evaluation. The interrelations between educational objectives, learning experiences, and evaluation procedures may be illustrated by the following figure :



An integrated understanding of the whole problem of evaluation in the context of our educational objectives and learning and teaching methods is necessary. We must realize the crucial influence of the type of examination upon student preparation and on teacher's methods of preparing students. Examination results should be analysed to find out the strengths and weaknesses, successes and failures of both the students and the teachers. Well-made examinations serve as mirrors reflecting faithfully good and bad points of the entire educational system. A creatively constructed evaluation tool can feed back significant information for improvement of instruction. Sound evaluation procedures are academic barometers that indicate whether the educational atmosphere and climate are fair or clouded.

The problem of evaluation is far more fundamental than is commonly recognized. The basic and crucial question is : what is it that we are measuring and what are we examining for ? What are

the objectives involved in the entire process of education and how far are our measuring tools sensitive to them? The problem of evaluation is inextricably bound up with the broader educational issues of our major purposes and of realizing them in a series of significant learning experiences. It is wrong to imagine that evaluation is a sudden, unwanted, doomsday visitation; in reality, it is the natural fruition and fulfilment of a continuous process of educational maturing and growth.

Education is a process of bringing about certain behavioural changes in desirable directions in the pupils who go through it. Examinations are nothing more than a systematic gathering of evidence regarding the extent to which behavioural changes envisaged in our curricula and teaching processes have actually occurred in a given set of students. A clear statement of objectives is, therefore, the main criterion by which the validity of our examinations should be judged.

How can we evaluate without adequately defining the course objectives? Evaluation procedures are meaningful only after educational goals have been clearly understood." Our educational purposes alone can provide valid criteria for judging student performance. The educational purposes tell us about the sort of evidence we must gather regarding the fulfilment of these course objectives.

It is obvious that we should define the objectives of a training programme prior to its evaluation. It is necessary for us to be aware of our educational objectives in an articulate and explicit way and then there is the further obligation of relating our means and methods (learning experiences and instructional materials) to our ends. Teaching and evaluation techniques have to be compatible with stated objectives. There should be a harmony and complete consonance between course objectives, instructional methods and educational measurement and evaluation. "Educational objectives, training methods and examinational procedures should be compatible with each other. Evaluation cannot be isolated from the broader philosophical and methodological issues in education.

Examinations and tests do not come as bolts from the blue but they are organically related to teaching and learning. Evaluation is not just a needless interference and an unwanted nuisance but it is the most obvious way of ascertaining and stimulating student growth. It is a mistake to regard tests as useless formalities that regularly occur at the end of work session; really they are an essential fruition of the educative act. Evaluation is only the systematic gathering of evidence on pupil development, an assessment of the extent to which students have progressed in their studies.

Evaluation should not be considered as being isolated from the general process of teaching and learning but, should be properly viewed as an essential and integral part of the whole educative act.

The entire educational process can be conceived, as consisting of three parts: (a) definition of the most desirable behavioural changes that we intend to bring about, (b) systematic planning of learning experiences that will promote these desirable behavioural changes—the manipulation of materials and methods so that these objectives are achieved, (c) setting up proper evaluation procedures for assessing whether the desired behaviour changes have occurred. It must be remembered that the directive principles of sound methods of examination are logically derived from intended educational objectives. To evaluate properly, we have to answer the question: what are we trying to do when we are educating a child? The simple answer is 'we are really trying to change him'. As a result of training, the child is in some ways and in some degree different from what he was before he received the education. We send our children to school where the teacher talks to them, asks them to observe and listen, 'read, write and do the sums. He imparts them varied information and ideas and tries to create in them new enthusiasms, interests and tastes. In short, the teacher is trying to mould his pupils and make them different in some ways from what they were before they entered the school. He is attempting to change student behaviour in directions which are considered to be desirable. Our specific educational purpose supply us valid criteria for evaluating student performance. We can assess student preparation adequately only in the light of the specific skills, abilities and competences that are intended to be developed in the course of education.

Granting the need to state our educational objectives clearly and explicitly, considerable difficulty is likely to be experienced in actually defining and elaborating them. Highly abstract, general and vague objectives like 'preparation of the student for a good life', 'training the student to be a useful member of society', 'intellectual discipline' or even 'developing the critical faculty', will give no help in class-room teaching or the actual drawing-up of an adequate evaluation programme. The objective of "intellectual discipline" does not tell us the behaviour that qualifies a student who has the "intellectual discipline". We must know how such an individual will act, think and feel. How can we unmistakably spot and identify a pupil who has acquired the "intellectual discipline"? It is not true that all-inclusive blanket objective of 'training the mind' or 'developing critical thinking' will suffice in providing concrete help in teaching and examining in different courses and at different levels. The fact of the appreciation of need to define objectives prior to evaluation does not mean that educators become readily aware of all of its implications. To prepare a detailed and definitive statement of our major educational purposes is a matter of continuous collective thinking on the part of the entire body of teachers and examiners. This may entail a series of discussions to thrash out details of course objectives in

terms of specific observable student behaviour. Such detailed spelling out of objectives in behavioural terms will facilitate production of detailed test materials and a complete blue-print of the final comprehensive examination. Once the need to state our educational objectives clearly and explicitly is pointed out and accepted, the actual working and implementation of the programme of developing detailed specifications and devising suitable test materials would depend upon how conscientiously and interestedly teachers and examiners function. "In order to evaluate properly the outcomes of learning, the curriculum should be drawn up in accordance with well-defined educational goals. The whole curriculum should be broken up into functional units indicating what each unit is meant for in terms of learner's behaviour. This will greatly facilitate construction of appropriate tests to assess the outcome of learning.

We must be precisely informed as to what specific qualities and behaviour patterns must be produced in our young men through education. We must analyse and classify the intended behaviour of the students, the way in which children are to act, think or feel as a result of participating in some unit of instruction. It would then be possible to construct tests according to the specifications given in the examination blue-print, reflecting each one of the several objectives. The work of detailing objectives and specifications for examinations requires a persistent inquiry from all concerned with education.

Sources of Objectives : Ultimately it is the individual teacher who must work his programme with a clear perspective of operations and objectives involved. It is only natural that the teacher should tell, in sufficient detail what he is trying to accomplish in the course and how precisely he is preparing his students. The teacher must take an analytical approach to course objectives and say with sufficient degree of explicitness and specificity as to what they are trying to do in their courses of training. However, teachers and examiners may be aided in their search for objectives if they think of the following sources :—

Objectives of any particular course could be derived from information available about students taking that course. What is their present level of development? What are their needs? What are their interests? Answer to such questions will initiate preparation of a statement as to what precisely the child is to be like when he has gone through a sequence of learning experiences.

Another fruitful source of objectives is the account of the conditions and problems of contemporary life. What are the functions that our young men are to perform? What are the problems they are likely to face? What are the likely openings for them. What are their prospects in the directions of self-fulfilment and service to the community?

An important source of objectives, is the conception of the subject matter of the course. What is the view of the experts in the subject field. What specific attitudes, skills and competences are included in the scope of the subject by knowledgeable persons ?

Determination of the Relative importance of Different Objectives :

Mere listing of diverse objectives is not enough. They have to be thought together, compared and rank ordered. Distinctions have to be made between ultimate and immediate objectives and different weightages have to be assigned according to their relative importance. These relative and comparative studies have practical significance for the development of evaluation procedures and for deciding upon the actual emphasis in an examination.

Stages in the Development of Evaluation Programme : Some well-defined stages or steps in the evaluation procedure stand out. (1) Formulation and selection of educational objectives that are to be evaluated. Assigning weights to different educational goals. (2) Translation and spelling out of the objective into specific measurable student behaviour. Definition of each objective in terms of student behaviour. (3) Identifying and providing test situations in which these behaviours can be evoked and can be observed. Collection of situations in which students are expected to reveal whether they have achieved each one of the course objectives. (4) Some device for recording the evidence of presence or absence of expected pupil behaviour and measuring it. (5) Objective and reliable evaluation of student performance in the light of each course objective. (6) Analysis and Interpretation of recorded evidence and results.

Tests and Evaluation Procedures : Measurement is the principal tool of evaluation. The purpose of measurement is to decide whether the expected change in performance has occurred and if it has, to what extent. In measuring change in performance, we necessarily observe only a sample of behaviour for we cannot observe all the relevant behaviour. A test performance is such a sample of behaviour.

The essential characteristic of a test sample is that it should be *representative* of all the behaviour in which we are interested so that we can arrive at reliable conclusions. A sample of behaviour tested is representative to the extent to which it is comprehensive and includes the same kind of behaviours as the behaviours in the population about which we are concerned. Of course, in the application of any evaluation procedure, the obvious assumption is that the pupils being tested have received training in the desirable behaviour changes that the evaluation procedure is measuring. Similarly proper evaluation procedures assume a consistency between course objectives, learning experiences and evaluation procedures.

Characteristics of Measurement Procedures

The Relative character of psychological measurement : Many psychological variables and behaviour changes cannot be broken up in units of amount. For, instance, we cannot break up changes in reading behaviour into units of reading ability. But we can compare the relative amount of behaviour change that takes place in respect of reading. In educational measurement we make judgements about relative position or relative change.

Reliability of Measurement Procedures : The fundamental requirement is that any measuring instrument must be reliable. We have seen that a test should sample defined behaviour change in such a way that inferences drawn from such a sample are dependable. This implies (1) sampling the range of situations in which the behaviour change may occur and (2) embracing a large enough number of these situation so that the observed behaviour change is characteristic of the person tested.

Broadly construed test reliability indicates the extent to which individual differences in test scores are attributable to chance errors of measurement, and the extent to which they are attributable to true differences in the characteristic under consideration. Every measure of test reliability denotes what proportion of the total variance of the test scores is "error variance".

Any condition which is irrelevant to the purpose of the test represents error variance. Thus when the examiner tries to maintain uniform testing conditions by controlling the testing environment, instructions, time limits, rapport and other such factors, he is reducing error variance and making the test scores more reliable.

Many factors affect the reliability of measurement procedures. They must provide us with enough instances of, the behaviour which we are trying to measure. When a test is devised, usually the optimal conditions are also stated. It is presupposed that the child is working at his maximum level of ability. The test is reliable under such assumed conditions of measurement.

A test is reliable when it functions in a consistent manner. In general, the concept of test reliability refers to the consistency of scores made by the same person on different occasions, that the score of an individual on a certain test is not a chance score but a consistent, dependable good score. A reliable test gives stable and trustworthy results. It is reliable when it yields the same result on repetition. If a child's test score, say on an I. Q. test randomly fluctuates when tested at different times, it cannot be said to be a trustworthy measure of intelligence. In measuring reliability the emphasis is upon the agreement of the test with itself. As reliability of a test refers to the degree of consistency or agreement between scores on two independent applications, it (test reliability) can be

expressed as a correlation coefficient denoted by the statistical symbol 'r'. In theory, the correlations between successive applications of the test should be positive and perfect (+1.00). In practice a reliability coefficient between +.85 to +.95 is accepted as satisfactory.

There are several techniques of measuring test reliability, of computing the reliability index. They are : (a) test retest (repetition) method, (b) alternate or parallel or equivalent forms method (c) split-half method.

(a) *Retest Reliability* : The easiest way of determining the reliability of the test is by means of a retest or repetition of the same test on a second occasion, on the same group of children. The reliability coefficient is found by computing correlation between the first and second set of scores. Practice and transfer effects between the two administrations of the test create serious complications. Scores on the second application of the test are almost always greater owing to familiarity, confidence, memory of the first answers etc., and the reliability coefficient tends to be spuriously high. If the time interval between test retest is rather great (more than six months) natural growth tends to affect the second score differentially and generally reduces the reliability coefficient. If the time interval between tests is sufficiently long to offset memory, practice and other transfer effects the retest reliability becomes a measure of the stability of scores. Thus test retest reliability coefficient functions as a stability coefficient. It is obvious that retest technique is more accurate only in case of tests which are not influenced appreciably by repetition.

(b) *Equivalent form Reliability* : One way out of the above mentioned difficulties is to take the correlation between equivalent (alternate or parallel) forms as an estimate of the self correlation of the test. Here reliability coefficient becomes a pointer of equivalence of the alternate forms of the test. The parallel forms must be truly parallel, matched for content, form, and range and level of difficulty.

Split-half Reliability : In this technique, the test is first divided into two comparable halves and the correlation is found between the two scores obtained for each individual on the two equivalent halves. How to split the test into two equivalent halves? The odd-even split is quite common and adequate for most purposes. It should be borne in mind that correlation found between the two half-scores actually gives the reliability of only a half test. So the self correlation of the whole test is computed by the Spearman-Brown prophecy formula which is given as

$$r_{11} = \frac{2r_{\frac{1}{2}\frac{1}{2}}}{1 + r_{\frac{1}{2}\frac{1}{2}}}$$

where r_{II} = reliability coefficient of the test and $r_{\frac{1}{2}II}$ = reliability coefficient of the half-test. Currently attempts are being made to substitute the Spearman—Brown formula by a more accurate and equally convenient measure.

The split-half method of estimating test reliability is preferred by many for its principal advantage that all the necessary data for determining are obtained in a single administration.

Validity : In determining validity we are concerned about one test's agreement with the *objective* ; in reliability, as we have seen, we are concerned about agreement with itself. The usual illustration is from Linear measurement wherein the validity of the yard stick, insistence is on its agreement with the standard yard kept in the National Bureau of Standards whereas, in its reliability, the emphasis is on its agreement with itself.

Validity of a test depends upon its capacity to measure what it proposes to measure. For instance, a test of intelligence should measure intelligence and not speed of performance. Test validity is about what the test measures and how well it does so. A test is valid to the extent to which we know what it is measuring or predicting.

There are two ways of finding out what a test measures (a) Logical method and (b) Empirical method. In the former, an attempt is made to judge precisely what the test is measuring. Well made educational achievement tests are validated by the consensus of competent teachers as to what a pupil of a certain age or grade should know about say, history, or any other subject field. In the latter, one, tries to demonstrate that the test is correlated with some other external variable and hence measures the same thing.

A test has to be validated empirically for the purpose of choosing personnel for special jobs. It must be experimentally demonstrated that test results do in fact enable us to sort out those who succeed from those who fail on a particular job.

Sometimes a distinction is made between internal and external validity. Internal validity is concerned with the care with which a test is constructed. If items are carefully selected and arranged with proper consideration of accepted objectives, if they are well written after preliminary try out, with ambiguities and possibilities of misunderstanding removed, if they are properly judged and well accredited by a jury of experts, then in such a test, curricular or internal validity would be satisfactory. External validity is established in terms of some measure outside the test itself, against which the measuring tool is compared. A test is recommended for use after it is tried out by comparing it with actual achievement in a practical situation or with other measures in the same field.

Validity is relative and specific. A test may be highly valid for a particular purpose and highly invalid for use in another situation. No test is good all round. We cannot go on using a good measuring instrument indiscriminately, generally, universally. Further, validity is specific in the sense that a test may be good when administered to one group of children but not so when given to a different group.

Many kinds of validity have been reported; however, we shall consider and group them under some types.

Face Validity : 'Face validity refers not to what the test necessarily measures, but to what it appears to measure.' A test has face validity if it looks as if it is measuring what the test maker believed it was measuring. Face validity is probably least defensible and can never take the place of experimentally ascertained validity.

Content Validity : It is also called "logical validity." Content validity is relevant more especially in connection with achievement test construction. Achievement tests are designed to appraise the effects on pupils of a specific course of instruction. Achievement scores tell us how well the child has mastered the specified course skills and content. Content validity of a test is established by determining whether the test items adequately sample the skills and subject matter of the course. Apparently even a cursory perusal of test items should suffice to demonstrate its validity from this point of view. However, it is not quite so easy. Care has to be exercised in seeing that test items adequately sample the major aspects of the scope of the subject.

Empirical Validity : Such validity is determined by reference to the relation between test scores and some independent criterion which is supposed to be a direct measure of what the test is designed to predict. This is also called predictive validity. An independent criterion with which correlation is sought may be school marks, pooled ratings of competent teachers, previously validated measures, percentage of successes with successive ages or grades or other indices of performance and ability. Occasionally a test is validated against observation of the extent to which children increase their scores over a period of instruction known to increase the ability.

Factorial Validity : Since the statistical technique of *factor analysis* has been made available, in some instances, validity of a test is established by its factor loadings. Factorial validity refers to the correlation between the test and the factor common to a group of tests or other measures of behaviour.

Good evaluation procedures have also the characteristics of adequacy (the test sampling sufficiently widely so that the obtained scores represent relative total performance in the area measured),

objectivity (freedom from bias and personal judgement in scoring the test) etc.

Variety of Evaluation Devices : The teacher is not inevitably and rigidly bound down to some traditional form of examination. He can choose his instrument of measurement from a wide variety of such procedures. There are paper and pencil tests (1) teacher made as well as (2) standardized. Both of these can be (a) essay type or (b) objective. Observation of pupil behaviour, interviews (oral test), questionnaires, check list, pupil products, records and rating are diverse methods of gathering systematic evidence on pupil preparation. What is important to note is that evaluation signifies a flexible approach and not a final commitment to some dull and stereotyped methods of examining.

Class Room Evaluation : The teacher who has understood the underlying theory and principles of evaluation and test construction will not hesitate to apply them to his assessment in the class-room. He has also great freedom in selecting test exercises and in choosing test item forms. He has plenty of freedom and initiative in shaping his instrument of evaluation. He may use recall items (where the student must demonstrate that he has learnt some information and is able to recall it) or recognition items (where the student has merely to identify the correct answer). A question can be asked in many different ways and we can set it in any alternative form so long as it elicits the behaviour we want to measure. There is an impressive variety of new type tests like true/false test, multiple choice forms, matching tests, completion tests, the short answer and lastly the familiar long answer or essay questions.

The Essay Type Examinations : Essay questions ask the student to answer at length. The essay question has a definite place if our objective is to test student's power of exposition, argument and expression. If we are interested in testing a pupil's skill in organizing information and ideas, in criticizing and evaluating points of view, and in thinking out possible solutions to problems, we may present essay questions and require the student to answer extensively, thus eliciting the above mentioned function. Style of writing, ability to write clearly and correctly are very desirable educational objectives and the essay examination evaluates the attainment of these very easily and conveniently.

However, sometimes the essay questions are too vague and too comprehensive to give any direction to the student regarding the kind of answer desired.

Essay and New Type Examination : In recent years, the essay examination as contrasted with the new type examination (say typically of the multiple choice form) has been the subject of considerable amount of controversy. Essay examination is relatively easy to construct but difficult to assess especially if the number of scripts is

large. New type objective tests are difficult to design but they can be scored easily (with machine also) even with thousands of students. Essay questions are convenient in the sense that they can be written even on the black board at the eleventh hour, whereas, the large number of new type multiple choice questions have to be printed or at least cyclostyled, often requiring special answer sheets, scoring forms etc.

Essay examination is less reliable than the objective tests; its unreliability comes from (1) subjective, impressionistic marking and (2) inadequate sampling of content. Different teachers disagree and the same teacher may evaluate an essay differently on different occasions. Fall's studies in variations in grade values of English Composition are well known. Such undependability of grading, detracts much of the theoretical validity of essay. Actually, in practice, vague essay questions encourage highly subjective valuation influenced by a number of accidental ("luck factor") and personal factors. An extreme indictment of the essay is that, it is often a confused response which is evaluated in an equally confused and confusing way.

However, it is possible to remedy the defects of the essay examination by devising an agreed scoring scheme of assessment specifying points like the relative weights to subject matter, structure, length, grammar, coherence etc. When several examiners are to assess the long answers they should discuss and agree in advance, on the criteria for marking.

Examinations Old and New :

Old Examinations : We have seen that examinations cannot properly be isolated from the general process of teaching and learning but they form an essential and integral part of the entire educative process. The right type of examination can be a real constructive force in education, influencing student preparation and also teaching and learning methods. A well made examination, not only evaluates progress and certifies attainments of the student but it also serves diagnostic and motivational functions. It stimulates clear understanding and fuller learning and also enables us to discover interests, aptitudes and abilities of pupils. Properly used, it can discover both the strengths and weaknesses in student preparation and teaching methods and thus motivate both towards greater and better educational effort.

We have seen that the examinations should be planned in accordance with the aims and objectives of education. Consequently course objectives are to be clearly visualized and elaborated in terms of the specific competences, academic skills and other expected changes in pupil behaviour. We have also seen how the new

philosophy of education objectives is influencing curriculum construction and methods of teaching, learning and evaluation.

Traditional system of examination was of a relatively simple sort. The major instrument of evaluation was the essay examination which, as we have seen, has been severely criticized lately. Essay-type questions are generally vague and indefinite and encourage marking which is likely to be impressionistic, subjective, variable and influenced by a number of accidental and personal factors. Thus reliability of testing is lost; in fact it is hardly ever measured and mentioned. The old type examinations, it is alleged, are neither reliable, nor valid. They are not valid because success on the examination is not always determined by what it proposes to measure but by such extraneous factors as quality of hand-writing, ability to write well or the examiner recognizing some of his favourite catch phrases in the answer etc.

Another criticism is from the point of view of coverage and sampling. How can a few questions adequately cover the entire curriculum and other diverse skills included in course objectives? Due to inadequate simpling, the examination may turn out to be a hit or miss affair where a child may do well only if a few favourite questions occur by chance. Often such an examination degenerates into a mechanical routine where a few questions keep on repeating with minor verbal alterations. As such it encourages cramming and memory work. Such insipid tests rarely touch or tap the individual and reach out for diverse course objectives, skills and competences. Even when the work of assessment is carefully done, the essay examinations have obvious limitations. Nobody can thoroughly and conscientiously value more than a few essay scripts. It might have been all right when only a selected few were getting themselves educated but it is not suitable for our growing democracy with its increasing school population.

The traditional procedure of examining through a final comprehensive examination has bad effects on both the teachers and the taught. Individuality is banished from the whole educative process; selective teaching, selective learning, and cheap 'guides' become the order of the day. The final comprehensive examinations often encourage wrong attitudes of indifference and neglect on the part of the pupils throughout the major part of the year and desparate eleventh hour cramming often leading to acute anxiety, emotional upset and in extreme cases nervous break-down. In spite of all this definite place, especially at higher levels of education where students' ability to organize ideas and power of exposition, argument and expression are to be judged. Moreover the essay type examination can be improved by providing a detailed scheme of scoring. Essay questions should range as broadly as possible across the course content. Content coverage can be increased by having a larger

number of questions for which the pupil is expected to write shorter answers.

New type Objective Test : The new type tests make for greater objectivity and reliability. They are modelled on the pattern of group intelligence tests with a large number of short questions and a rigorously standardized system of administering and scoring or marking. The objective questions test knowledge of the pupil in any of the school subjects like history or geography and measure the proficiency of a particular child against the average proficiency of other children of the same general intellectual capacity. These are achievement or attainment tests. In fact all school examinations are achievement tests. Some of these tests measuring school achievement are standardized for age and grade. As we have seen, there is an impressive variety of New Type test techniques : the multiple choice, true-false, matching, completion tests etc. The obvious advantages of objective test are speed of administering and marking, greater reliability, wider coverage etc.

In spite of these good points it is feared that an exclusive reliance on objective test would encourage unprofitable smattering of isolated bits of information. It is suggested that the new type objective tests only emphasize knowledge of the simple facts and do not provide any evidence regarding the child's understanding of the more general issues. They measure pure memory, to the exclusion of comprehension. The objective new tests rarely tap the creative abilities of a person. Criticisms such as these show how bad the new type tests can be when improperly constructed and ignore their creative and significant applications by competent test constructors. This may be true of poor objective tests but given the necessary ingenuity and skill, they can be made very searching and challenging and adequate for measuring quite complex skills like understanding judgement, reasoning etc. Which is better ; the old or new examination ? This is a bad question. The real question is how they can both be made as efficient and useful as possible and how they can be made to supplement each other.

Achievement Tests : Standardized achievement tests are essentially improved types of examination which teachers construct to cover an area of learning. The following improvements are generally effected; (1) more careful sampling and selection of representative test items, (2) greater care and better workmanship in item construction, (3) preliminary try out of selected items leading to their revision and refinement, (4) preparation of various norms and (5) greater objectivity and accuracy in grading and scoring.

Most of the achievement tests have logical or curricular validity which however, cannot be always taken for granted. Before a teacher launches upon an evaluation programme by means of achievement tests, he should ascertain to what extent his students, ought to be

able to tackle the items of the tests. An achievement test comprising only information items has only a limited value. A good achievement test should adequately sample all the different kinds of behaviour change and skills involved in the course of learning.

The principal steps or stages in planning and developing an achievement test may be summarized as under (1) formulating and stating general educational goals and course objectives, (2) translating the objectives into specific measurable pupil behaviour, (3) assigning weights to different educational goals, (4) outlining the content of the course, (5) providing tests situations in which these behaviours can occur and can be observed, (6) some device for recording and measuring the behaviour.

Theoretically test procedure makes controlled observation of behaviour possible. Typically a standardized test gives detailed instructions regarding the manner in which the test is to be given. A standardized test is usually tried out on large number of pupils so that optimum conditions likely to encourage maximum performance have been ascertained and stated. Standardized tests are accompanied by detailed manual of instructions which should be rigorously observed if controlled observations are to be made.

Teacher made Tests and Standardized achievement Tests :

Though expertly made standardized achievement tests are an invaluable help to the teacher in that they save much of his time and energy which he can utilize for remedial work of the individual pupil there are dangers in their indiscriminate use. Excessive standardization, it is feared, depresses the teacher, pupil initiative, spontaneity, and creative originality of contributions. Highly standardized tests neglect individual differences in both the teachers and the taught. They dissuade teachers away from vital flexible adaptation of instruction to local requirements and conditions. There are risks of encouraging a shallow test-oriented instruction. Some of the available achievement tests demand only factual knowledge ignoring understanding, critical evaluation and application of general principles. If, however, due care is taken so that the achievement test examines on all the important goals of education, each weighted in proportion to its importance in the course, much of the above given criticism loses its force. The truth is, achievement tests like any other kind of test should be looked upon as tools and means and not as goals or ends.

Sometimes teachers may find that the tests they themselves construct including the achievement test of the objective type, serve their particular requirements better. Printed standardized achievement tests may not be adequate to measure progress in the portion covered in a particular school or by a particular teacher. In such cases, it may be necessary to supplement or even to supplant the published standardized tests by the teacher made objective tests.

However, by the very nature of the case, such teacher made tests can have only limited application and usefulness. The class teacher has neither the statistical training and quantitative sophistication nor the leisure for estimating the reliability and validity of his own tests. Hence only very rough and ready and very limited inference can be drawn from the results on the teacher made tests. For instance, he cannot compare the performance of his class with that of the other class having comparable learning experiences. Standardized achievement tests have been designed to provide comparative data on pupil performance. Such comparisons supply added information about students in a particular class.

On the contrary, published and printed achievement tests are commonly devised by expert test technicians and subject matter specialists. They are more thoroughly analytical than the teacher made tests. They are standardized for wide samples of children and thus enable us to make comparative judgements with regard to basic skills and information about individual pupils, schools and even regions. Standardized achievement tests used to measure the attainment of course objectives thus provide a useful check on the educational standards in different places. It is possible to interpret more meaningfully the scores on standardized achievement tests by reference to certain norms. Generally the average (mean or median) achievement of a group is taken as the norm. These norms are average scores of pupils of different ages and grades. Norms are scores which indicate an individual's relative performance, the position of his performance among those made by the standardization group. The score of a pupil of a given chronological age is seen in relation to the average score of his age group. He may be above or below this mark. If he obtained a score say in reading, equivalent to that of the average ten year old child, his reading age would be ten. In the same manner arithmetic age may be computed from his score on a standardized achievement test in arithmetic. A pupil's composite or average educational achievement on a battery of achievement tests of school subjects is called his *educational age* (E.A.) which is akin to the mental age (M.A.) obtained on an intelligence test. In like manner we obtain the "educational quotient" by dividing the educational age or E.A. by the chronological age or C.A. The formula for the educational quotient (E.Q.) is—

$$E.Q. = \frac{E.A.}{C.A.} \times 100$$

Thus a boy who is chronologically ten years old and has an educational age of nine will have an E.Q. of 90. The E.Q. tells us how well or badly a child is doing in his school work.

Another index called the "accomplishment quotient" is sometimes calculated by dividing the educational age (E.A.) by the mental age (M.A.). This in effect means that in assessing educational

accomplishment the frame of reference that is used is the mental age and not the chronological age. The formula is :—

$$A.Q. = \frac{E.A.}{M.A.} \times 100.$$

Aptitude Tests :—An aptitude test is designed to estimate a person's capacity for a particular line of work before he receives any training at all. It tries to know in advance of actual training, whether a person will probably succeed in a given line, like clerical work, handwork, musical performance etc. Aptitude tests are given *before* training starts, whereas achievement tests come *after* a course of training. It may be noted that intelligence test is an aptitude test in that it tries to predict probable success in the academic field.

Aptitude Tests and Achievement Tests :—Usually achievement tests are contrasted with aptitude tests which also include general intelligence tests, differential aptitude tests and the more limited special aptitude tests. Whereas aptitude tests look forward and enable us to answer the question "what can we expect of this child", achievement tests look backward and try to answer the question "what has the child accomplished?" Intelligence test is an aptitude test in that it attempts to predict behaviour, whereas an achievement test or an attainment test is devised to measure the degree of proficiency or progress made by students in the mastery of school subjects.

The aim of achievement test is to measure the effects of a past training given in specific course of study, whereas aptitude test serves to predict subsequent performance. The difference between the two is however not absolute. It is true that all achievement tests measure a pupil's present behaviour which necessarily indicates the effects of previous training. But the fact that every test score has a past does not preclude its having a future. Current achievement, while reflecting the effects of antecedent learning may also serve as index or predictor of future level of performance. The difference between achievement test and aptitude test boils down to a difference in degree of uniformity of relevant prior experience. Thus achievement test measures the effect of relatively standardized sequence of experiences such as, say, a course in solid geometry. On the other hand, aptitude test scores reflect the cumulative influence of a variety of informal experiences of life. It might be said that aptitude test appraises the effects of learning under relatively uncontrolled indeterminate conditions, whereas, achievement test makes an assessment of effects of learning under partially known and controlled conditions. Aptitude test score is an initial estimate of probable future success while achievement test score is a terminal evaluation of a pupil's relative position upon completing a course of training. However, no hard and fast distinction can be insisted upon because, for all we know, it is quite likely that past achievement

in a certain direction may be a better pointer of future success. It is obvious that estimating aptitude or probable future occupational achievement is more uncertain than measuring current achievement. This is so because while some abilities may be *necessary conditions* for occupational success, they may not be *sufficient causes* thereof.

Purposes and functions served by measurement and evaluation :—

Measurement and evaluation are currently employed in education for a variety of purposes. Test information may be used for facilitation of learning and improvement of instruction—for determining the effectiveness of educational courses and programmes and class-room procedures and practices. Evaluation leads to proper planning of teaching learning situations by revealing strengths and weaknesses of instructional methods. Examinations serve as a mirror to the entire educational personnel. Test information may lead to curriculum improvement and proper curriculum emphasis by revealing the inadequacies in curriculum content and organization. A creatively constructed examination focusses attention on diverse educational objectives and clarifies them.

Evaluation promotes better learning by discovering and understanding learning difficulties. It motivates greater and better effort after meaningful learning.

Proper evaluation programme is the necessary condition of all student guidance and counselling. Examination results serve as a basis for preliminary grouping, and classification of children, their judicious placement at proper stages of development and selection of courses requiring special aptitudes, abilities, and status. Certification is also an important function of evaluation.

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The problem of dealing with and educating the backward child has bothered the teacher and the parent since times immemorial. Philosophers, physicians and, teachers have explained the problem in their own way, in regard to its causation and treatment. Dr. Johnson thought that stupidity usually resulted from stubbornness : hence, he recommended the continuation of severity till negligence was cured. On the other hand, Hobbes held that the fool could not be mended by flogging and he who flogged was the greater fool.

With the advent of democracy in most countries and the consequent acceptance of the principle of "education for all the children of all the people", the problem has gained vast dimensions. The number of dull and backward pupils has increased, making the problem doubly intense and difficult. But in spite of these difficulties, the work of investigating systematically the causes of educational backwardness and assessing the remedies as advocated by various workers in the field, has received momentum during the last few decades.

Who Are Backward Children ? Backward children are slow learners. They show inability to progress normally in school work. They are unable to do the work of the class in which they are placed or even of the class below that. "They, compared with other pupils of the same chronological age, show marked educational deficiency." (23 ; 55) They, usually, do not respond to the ordinary school curriculum and to the common methods and procedures of the classroom teacher. According to Barton Hall, "backwardness in general, is applied to cases where their educational attainment falls below the level of their natural abilities (3 ; 102)."

A similar idea is expressed in the well-known educational pamphlet published by His Majesty's Stationery Office, London. The authors of this pamphlet remark, "In any school or community there is a sort of a forward movement always in progress and that the backwards are those who fail to adapt themselves to the pace at which the majority of their fellows of the same age are moving..... When we consider this in relation to education we think of this forward movement in terms of the intellectual growth and progress in achievement. In schools this term is most commonly used in relation to the three R's. (15 ; 6)."

Burt described "a backward child as one who in mid-school career is unable to do the work of the class next below that which is normal for his age (8 : 77)." In his latest book on backwardness, Burt gives a more precise definition, in terms of, 'educational ratio' or 'educational quotient'. This can be obtained by first ascertaining the average attainment level or age in all the subjects and then dividing it by his chronological age. Thus educational quotient is = $\frac{\text{Attainment Age}}{\text{Chronological Age}}$. According to him, a backward child is one whose 'educational ratio' is below 85 whereas a medium child has 'educational ratio or quotient' between 85 and 155 (9 ; 37)."

Whatever the manner of describing backwardness, the characteristic feature is 'educational impoverishment'. This may be shown in one or two specific subjects or in all subjects. Accordingly, backwardness may be either *specific* or *general*. General backwardness is due primarily to intellectual deficiency or dullness, but there are many pupils who are backward but not dull. Their backwardness may not be due to intellectual retardation but to some acquired or extrinsic conditions such as absence from school, frequent change of school, ineffective teaching methods or unfavourable temperamental and emotional attitudes towards the teacher or teachers, or illnesses and poor physical conditions.

Before the causes and factors that contribute to scholastic backwardness are discussed, it is necessary to realise that backwardness, even though, primarily an intellectual or scholastic condition, is a psychological characteristic that arises from and affects the pupil's entire personality—"that complex integrated resultant of innate equipment and environmental influences attained by an individual in the course of his development built up from intellectual abilities, temperamental traits, motor capacities, sentiments, complexes, habits, and physical characteristics, which through a variety of experiences, are moulded into a personal pattern which distinguishes one individual from another" (22 ; 1).

Scholastic failure, in the words of Uday Shankar, is essentially the psychological failure since the simple intellectual experience cannot be separated from the total mental life of the child. (25 ; 58) Investigations and studies on the problem of scholastic backwardness show that it is not merely an educational problem, but is equally a personal and social problem. The scholastically backward suffer from deep frustrations in life and quite a number of them relapse into delinquency and other 'anti-social ways of living. Burt writes that "most of the paupers, criminals and the never-do-wells are recruited from the educationally sub-normal." (9 ; 16) Many of them become problem children and behave like the mentally sick or the maladjusted. The failure to keep up a standard of scholastic achievement compatible with intellectual capacity, blocks the flow of life and creates conditions of mental illness.

Causes of Backwardness—Burt's comprehensive research and studies made by Schonnel and Segal impress on us the fact of plurality of factors or 'multiple determination' as far as the causes of backwardness are concerned. These causes lie within the individual himself and outside him in the environment as in all development, whether normal or abnormal, both the hereditary or constitutional and the environmental factors operate together. Backwardness cannot be ascribed purely to this or that one, because the child's conditions results from the interaction of the two—the organism and habitat, plant and soil, growing child and circumscribed environment (9 ; 40).

Subnormal physical development is one of the important causative factors. It has been found that "some children are born with an inherited lack of vitality, or a weak developmental impulse which causes them to grow slowly." (25 ; 53) Burt found 79% of the educationally backward children suffering from some kind of developmental or physiological retardation. The developmental or physiological ratio, in the case of these 70% of the educationally backward children, computed from the physiological and chronological age for height and weight was found to be 95 : 1 on the average, as compared with 98.2 in the case of normal children (9 ; 51).

Physical defects and diseases contribute considerably to the causation of scholastic backwardness. These include defective vision, faulty hearing left-handedness, speech defects, as well as diseases like chronic Catarrh, bronchitis, enlarged tonsils or adenoids fever, digestive disorders and other glandular affections. They, coupled with general debility, malnutrition, tuberculosis, epileptoid conditions and chorea, induce headache and mental fatigue and seriously interfere with the problems of attendance in school and study at home, resulting in sub-normal scholastic attainments in particular subjects or backwardness in general. This has been clearly indicated in Burt's and Schonnel's researches. Often, these physical defects in such children are never detected or are recognised too late in life. Physical defects in a child mean that some of his sense organs are not functioning properly. The first cognitive act in the life of a child is performed through sense-perception. It is through sense perception that discrimination and conceptual thinking develop in an individual. If the sense organs are defective in functioning, the very first step in the entire process of learning is vitiated, leading to faulty discrimination, wrong judgments and impoverished thinking.

These physical or physiological defects alone cannot explain the scholastic failure. A low general intelligence—the inborn general capacity, is found to be the commonest and most serious of all the causes of educational subnormality. According to Burt, 15 per cent of the backward cases, suffer from this weakness alone. He found a high correlation (to the extent of .78) between intelligence and educational attainments. 77.5% of the backward children he studied,

were discovered to have intellectual deficiencies in addition to other causes (9 ; 449).

Schonnel thinks that 65% to 80 % of the backward are dull or deficient, and the remaining 20% or so have their educational difficulties, due to emotional and social maladjustment (22). This sheer innate dullness must limit the content of knowledge or learning or attainments. "If a child is born with a low measure of innate capacity, it will be foolish for the teacher to try to instil into him a normal amount of knowledge and skill as it would be to try to pour twelve ounces of medicine into an eight ounce bottle." (9 ; 68).

But it is possible that a child may be backward in spite of high intelligence. Quite a number of children with high intelligence show a great deal of 'Scatter' in their scholastic achievement due to emotional and social maladjustment.

Besides the subnormal physical development, a host of physical handicaps, and diseases, and low general intelligence, there are environmental factors which contribute greatly to scholastic backwardness. Among these, *poverty and the consequent lack of economic facilities and amenities in daily living at home*, are worth discussing. One of the facets of poverty is the *crowded home*, with large family and very limited means. In large families of limited means, the standard of living usually deteriorates and diet and nutrition are defective. Defective diet and poor nutrition lead to general debility in children because of which they cannot apply their mind to school studies. Crowded homes suffer from another serious defect. They provide very meagre parental contacts for encouragement and stimulation. Problems of disturbed sleep and rest and fatigued condition due to drudgery to which children may be subjected, are quite common.

Poverty, besides impairing health of children, limits general knowledge. It narrows their mental range and as such 'deprives them of that elementary fund of worldly knowledge and experience that most schools take for granted.' (9 ; 41). This happens particularly in working-class homes where intellectual interests are unknown. With poor intellectual and cultural background, the statements made by teachers or their reading-books remain mere meaningless formulae with no mental picture to correspond (8 ; 128).

Some idealists discount the factor of poverty in the causation of backwardness. They support their case by quoting Bunyan, Burn, Faraday, Lincoln... and many other geniuses "who have shown by their lives that a man may rise to intellectual eminence despite all the drawbacks of poverty (25 ; 64). But one cannot deny the damaging effect of conditions created by poverty on scholastic achievement, and the truth that with better material conditions, results would have been more positively encouraging. And moreover, the number

of the Bunyans, the Burns, the Faradays and the Lincolns in the common population, is exceedingly small indeed.

The emotional and moral conditions in the home also have an important influence on the child's educational progress. If the daily life in the home is characterised by anxieties, quarrels, and insecurity, if parental attitudes are either too harsh and dominant or too indulgent or they suffer from a variety of neurotic disturbances, children will not be able to develop qualities of independence and confidence which are essential for making progress in studies; "The overindulged children may have had everything done for them from birth onwards so that they never had the occasion or the opportunity to make an honest effort for themselves. Those, who have been over-disciplined and have had their lives directed in every detail may in consequence have lost all initiative and may tend to act as though, they suffer permanently from paralysis of will". (15 ; 17) With feelings of belongingness and self-confidence paralysed, children in such homes will have weak ego development : they will have no higher motives for hard work ; they will lapse into laziness and indolence in no time. This will be further facilitated if the normal climate in the home is vitiated by parental attitudes of slackness, carelessness, unpunctuality and evasion. Such attitudes will encourage children to be irregular, deceptive and dishonest in their school work and, thus lead them to scholastic backwardness.

Apart from the factors operative in the home, there are *certain conditions prevailing in our schools*, which are contributory to the problem of backwardness. Irregular attendance or prolonged non-attendance because of illness, late admission, father's transfers, occasional migration creates a serious set-back in the child's progress. Frequent absence from school, whatever the cause, is very detrimental indeed ! "Often a child misses some important stage (especially in arithmetic or the rudiments of reading), and can never catch up. Weakness in a fundamental process, e.g., division or vulgar fraction, delays him throughout....." (27 ; 609). Frequent migrations cause problems of adjustments to be made to new teachers, new courses and different school surroundings and routines. Burt's enquiry in London showed that among as many as 11 per cent of the backward cases, the chief cause of the child's lack of progress, was inadequate or irregular attendance due to various reasons (9; 45).

Other school conditions besides irregular attendance are the wrong choice of subjects on the part of some children, the inefficient and uninteresting teaching, illustrated in over-emphasis on intensive but meaningless drill or absence of drill, and the failure of the teacher to adapt teaching to the specific needs of the child, the rigidity and narrowness of the curriculum, and a system of either too quick or too slow promotions. Connected with the rigidity and narrowness of the curriculum, wrong choice of subjects is another factor. Many children become backward because they are being urged to

attack the wrong things. "The material of their lessons may be inappropriate: it may be too academic and therefore uninteresting to them ; or it may call for a maturity of mind which they have not yet attained (15 ; 15)."

The influence of the neighbourhood is another factor which might contribute to the problem of educational subnormality in children. The neighbourhood includes the streets where he goes, the shops he visits and the companions he plays with. Companions may colour their outlook on life, on work or on studies. For example, children in some quarters regard it more manly to profess a distaste for books and lessons. They express scorn for the teacher and make fun of 'learning' or 'conscientiousness in studies.' This scorn may be typical even of some adults living in such 'districts' or 'zones.' Such attitudes have an adverse effect even on the most conscientious student who may soon feel ashamed of his superior zeal for studies.

It is possible that the child may get associated with a group or gang whose members are out to create some mischief ; nothing good can be expected from them. These gangs are responsible for turning out delinquents in large numbers. These delinquents usually keep themselves away from many socially acceptable behaviours and ideals including habits of conscientious study. They have their own standards and norms of conduct.

Connected with the problem of neighbourhood influences is whether the child belongs to a rural area or to a town. No one can deny that in spite of many efforts, the attitudes and motivations of rural parents are not yet favourably inclined towards sending children to school. These are marked by indifference to learning as such and cause colossal wastage and stagnation in schools in this country. Children of such parents not only develop scholastic backwardness ; they relapse soon into illiteracy. While highlighting the importance of environmental factors, including the neighbourhood influences, Barons rightly remarks, "It is the kind and nature of the atmosphere in which a child lives that determine his gains or losses (2; 35)."

As mentioned above, *children with personality or behaviour problems or emotional disturbances* of one kind or the other, tend to remain backward. The mind of such children is agitated and torn by conflicts of all types. As such, no concentrated or constructive work is possible. Children who are recessive, highly aggressive, stubborn, restless and hyperactive, fearful and anxious, nervous, dependent and diffident, usually lag far behind in their scholastic attainments as compared to those who are emotionally adjusted and stable. These symptoms and behaviour problems arise in homes on account of wrong parental handling, manifested in their rejectant, dominant or overindulgent attitudes or where intra-parental relationships are far from satisfactory. Recently, a girl was brought to our

Clinic by her father, because she acted very stubborn in most situations and because she failed to achieve anything scholastically in spite of their best efforts. The girl was 12 years old and was still in Class III. She had been sent to good progressive schools for a number of years. The parents had arranged for her a number of individual tuitions as well. Her health condition was very satisfactory. She has a good positive medical history. After a couple of interviews with her and with her parents, we administered two intelligence tests on her and found to our surprise that her I.Q. was 110. The case history material, the data collected from interviews and other projective techniques showed that the girl suffered from a sense of terrible insecurity and inadequacy. The child was unwanted by both the parents. The mother nagged at her constantly and made invidious comparisons with her younger brother who was 6 years old. The father did not take much interest in her studies and pursuits because of the nature of his job. The intra-parental conflicts over the method of discipline and other matters were frequent and took place in the presence of the child. The girl disliked the mother to such an extent that she was disobedient and stubborn and resented all suggestions, including those about studies.

It may, thus, be noted that educational backwardness, is the result of multiple causation. Many factors combine together to cause slowness in learning or hatred of school in some form.

Specific Backwardness—It will be pertinent here to briefly review the problem of specific backwardness. According to Schonell, "A pupil is specifically backward and needs special help when his ability in a subject or allied subjects is at least one and a half years below his other educational attainments, and at the same time below his level of general intelligence" (22 ; 79).

Specific backwardness has been systematically and scientifically studied in the basic subjects in the school such as reading, writing and arithmetic. The backwardness in reading is studied in terms of the accuracy of word recognition, speed and comprehension of the content ; writing is studied by ascertaining weakness in spelling and in composition which is further sub-divided into abilities for reproduction, narration, imagination and description. Schonell, more than anybody else, has done admirable work in this field. He has attributed many causes to backwardness in reading, spelling and in composition. These causes can be discovered by measuring general intelligence, and scholastic achievement in various subjects, through the use of sensory tests, by assessing emotional characteristics and recording interests and by making a brief inquiry into personal history and educational history in the 'backward subject.'

Backwardness in reading has been attributed by Schonell (22 ; 152-203) to weakness in perception of visual pattern of words, weakness in auditory discrimination of speech sounds, adverse

emotional attitudes, defects of visual acuity, organic and psychological immaturity, irregularity of attendance, frequent change of schools and speech defects. Fernald (13) and Monroe (19) think that the cause of reading retardation may lie in the methods of teaching reading. For example, faulty methods of teaching reading either lay exclusive emphasis on sight or sound and do not approach the problem from a kinaesthetic point of view. Gates (1) is of opinion that the introduction of too many new words in the initial stages of reading or undue emphasis on the endings of words in teaching word analysis do more harm than good. Vernon (30) does not ascribe reading retardation to any inborn organic cause or disability, but he agrees with Schonell by remarking, "The one universal characteristic of non-readers suffering from specific reading disability is their complete failure to analyse word shapes and sounds systematically and associate them together correctly."

That reading disability may be due to emotional disturbance or blocking, on account of fears, anxieties or conflicts of various types, is very much emphasized by some psycho-analytical thinkers in the field of learning such as Blanchard, Pearson and English, Klein and Liss. They regard the reading disability as a symptom of neurosis and ascribe it to the unsuccessful sublimation of oral and aggressive as well as sexual drives.

Similarly, backwardness in spelling has been ascribed to weak visual perception of verbal material, weak auditory perception of verbal material, adverse emotional conditions, visual defects, irregularity of attendance, inattention, apathy, and lack of persistence, defective hearing, speech defects such as faulty pronunciation, and frequent change of schools (22; 297-325). While analysing the causes of backwardness in composition Schonell refers to such factors as insufficient out-of-school experience to widen ideas and outlook, poor home conditions, insufficient reading experience in spare time, ineffective teaching methods, general weakness in verbal ability, dislike of the subject and temperamental qualities and emotional attitudes such as introversion, carelessness about details, limited imagination, sulkiness and emotional instability (22; 417-489).

Besides these specific factors, other causes of backwardness in the various school subjects are similar to those which explain backwardness in general.

Backwardness of the Gifted Child—There is nothing more provoking than to have very able, gifted and highly intelligent students who refuse to do good work and who remain under-achievers. Strang, Terman (27; 157-159) and others, have studied this problem from various angles. All observers agree that among underachievers boys greatly outnumber girls and that no one cause or pattern of causes appears in all cases. But certain types of difficulty do occur more or less frequently. Broken homes where there is considerable strife and

strain, disagreement among parents, over-discipline, poor physical health, many changes from school to school, lack of persistence shown by most of them, subordination of study to extracurricular activities of all kinds, notoriously bad study habits, weakness in the fundamentals and lack of proper and adequate motivation are the usual factors functioning in the life of the gifted underachievers. Of these, the last factor, namely, the lack of proper stimulation is the most significant. It is possible that their natural ability remains unrecognised and unchannelised. The school work provides no challenge for them. Ordinary lessons may be too easy for them to be given adequate attention or to be taken seriously. They may get so bored that they may develop habits of day-dreaming or may indulge in some mischief as an outlet. "Not finding adequate opportunities for feeding (their) fertile minds, and (their) thirst for new experience, adventure and creativity remaining unquenched, (they) become irritable, hostile, vain and aggressive", (25; 62) and, as such poorly adjusted to studies.

The Discovery and Diagnosis of Backwardness—A sound knowledge of the correct methods of observation and diagnosis is necessary for a teacher in order to discover the backward child. Besides this knowledge, the teacher needs to have "a keen eye for significant peculiarities of behaviour and the necessary experience upon which he can draw for the proper interpretation of what he observes. Knowledge and insight must go together" (15; 19). The discovery must be made as early as possible, and once it has been made, the child should be carefully studied through continuous observation and by using other diagnostic techniques. This is needed to avoid rash judgements on the alleged dullness or backwardness of the child.

The intellectual level of the backward child can be assessed by any standardised tests of intelligence, both of verbal and performance types. Individual verbal tests of intelligence are preferable to group verbal tests. Having ascertained general intelligence, the individual child should be put through a battery of other psychological tests to assess his sensory acuity, span of perception, auditory perception, steadiness, speed and accuracy of hand movements, attention, memory and reasoning powers. These tests throw valuable light on the overall mental equipment or alertness of the individual.

Attempts should be then made to assess the child's emotional characteristics and temperamental traits. It is an undeniable fact that certain personality traits have a direct bearing on the specific backwardness. These include persistence, assertiveness, attention to details, sensitiveness to approval and disapproval, concentration, attitudes towards school work and emotional stability. W. P. Alexander has suggested that teachers' assessment of children's traits of personality can be used profitably for diagnostic and predictive purposes, particularly after the age of 8 years. He tested,

in one inquiry, children of eleven years, on such traits as self-confidence in failure, persistence in efforts, concentration, enterprise and attitude to adult authority, each on a five-point scale. (17; 40) For assessing backwardness in specific subjects, scholastic or attainment tests as well as the diagnostic tests in various subjects will be very useful. Standardised attainment tests will enable us to form a correct estimate of the child's actual attainment in a particular subject as compared to the usual attainment reached by children of that age. The diagnostic tests help us in estimating "the pupil's proficiency in separate significant skills which contribute towards success in the subject." They analyse "the pupil's ability in the various elements which together constitute the total processes in the subject (22; 97)." For example, a diagnostic test in reading will provide information on the abilities of visual and auditory analysis, discrimination and synthesis of word patterns. The reader is advised to consult Schonell's book on the subject, for the examples of various diagnostic tests in Reading, Arithmetic and English composition.

The data on the various tests, as discussed above may not be enough or adequate for complete understanding and investigation of backwardness in a child. Hence, observation of the child's mind at work under simple and controllable conditions in the classroom may be very much needed. The child's behaviour and reactions to various situations may be faithfully recorded. He may be watched on the playground and an estimate formed of his moral and social qualities. His recreational, occupational and extra-curricular interests may be ascertained. All this will supplement the information about his mental equipment obtained through objective tests. In this connection, it is necessary to see that a system of recording that is neither stereotyped and formal on the one hand nor overloaded with meaningless detail on the other, is planned carefully. These records, to be of any value, "should be impartial and objective and should have reference to the more permanent and fundamental qualities of intelligence and personality" (15; 21).

The diagnosis will not be complete, unless information about the results of physical and medical examination is also made available. The child's developmental history from early childhood, with regard to physical ailments, disabilities or handicaps, should also be carefully studied. A knowledge of the child's economic handicaps, living conditions and the size of the family will enable the teacher to have an idea of the opportunities and facilities which the child can enjoy in the home. To what extent can the child apply his mind to his studies, depends on the quality and scope of such opportunities and facilities.

The psychiatric social worker, attached to the school, or the visiting teacher can collect further information about the home—namely, to what extent, it provides intellectual stimulation or discouragement, the nature of general social and emotional climate

created by the parental attitudes, the type of discipline enforced, the cultural activities encouraged and the general moral tone that prevails. All this has to be given due consideration in diagnosis, for it has a bearing on the scholastic progress of the child. This information can be collected even by the ordinary class teacher through interviews with children and parents and by making home visits from time to time.

Whatever the methods used, "diagnosis to be of real value educationally must be positive as well as negative. It must tell us what the child can do as well as what he cannot do. For it is only when we have discovered where such interests and aptitudes as he possesses happen to lie that we shall be able to do our duty by him (15 ; 23)."

The Treatment of Backwardness : Their Educational Guidance— We have seen that in all cases of educational backwardness it is necessary to study every aspect of the child's development, physical as well as mental, emotional as well as intellectual. Again, the child's environment, particularly his social surroundings, both at home and at school, must be given adequate attention. "His present condition results always from the interaction of the two—organism and habitat plant and soil, growing child and circumscribed environment (9 ; 108)."

Whatever the details of the treatment, our main task should be to help a particular child make an adequate adjustment to the demands of his situation, keeping in mind the limits imposed by his circumstances and his natural abilities. In this process, we have to modify our treatment of the child himself or to modify his environment or to help him move towards a better one. It should also be noted that there is no single or simple remedy applicable alike to every case of backwardness. Each case is unique. Again, in every case, several causes are responsible for the condition : it may be the result of a combination of environmental, physical, intellectual, temperamental and emotional factors, as discussed in the preceding sections of the chapter. The treatment, very naturally, depends on the kind of backwardness and the causes which produce it. It is necessary to determine the defect and find out the cause or causes. The school doctor, parents, teachers, social worker or a visiting teacher, if any, all should work together in order that the correct causes are discovered and remedies made available, suitable to each individual case.

Much can be done for the backward children if school conditions can be adapted more closely to their needs and limitations. This can be effected, in most cases, by establishing special schools or special classes expressly for such cases. This step implies segregation which, though drastic, is in the interest of the children, "If they are kept with normals, they will be pushed back and the backward will become more backward than children of their own level. But they

will be less conscious of their drawbacks and they will feel more secure in a group of their own type where there will be more encouragement and appreciation and less competition" (25 ; 71). If the special school is a residential one, it is better and more valuable than a non-residential day school, because it is possible to deal with every aspect of the child's daily life as such. But complete segregation of backward children is undesirable. They should have opportunities of mingling freely with children of higher intelligence than their own, and of sharing with him some common tasks and pleasures.

If special classes are established for them in an ordinary school, we should see that they have a special curriculum, time-table and special methods of teaching. The curriculum should be as elastic as possible and suit the needs of the individual pupils. It should cover far less ground for the backward and dull than for the normal. Certain abstract technicalities which characterise each subject should be excluded. Far more attention needs to be paid to the utilitarian and concrete aspects of the work and far less emphasis to be laid on the abstract and theoretical studies, as the backward children, specially those who are dull, do not easily grasp abstractions and generalised rules. Curriculum should be such as prepares them for life and makes them intelligent citizens, competent workers rather than scholars. Some of the crafts which have been found useful for backward children include wood work, metal work, leather work, basket making, cane work, spinning, weaving, book binding and painting for boys ; and cookery, knitting, embroidery, tailoring and other subjects of household economy, for girls.

Cultural subjects need not be totally ignored but they should be taught in simplified forms to suit the children's interests and capabilities. Music, dramatics, dancing, drawing have been found useful for developing their powers of self-expression. Tales of heroes and noble men and women, told in a dramatic manner, have been found more useful than abstract ethical talks and platitudes on morals. The curriculum for the backward children should lay stress on 'physical culture.' Hence, physical exercises in the form of games, sports, gardening, rhythmic exercises are necessary for strengthening and co-ordinating bodily movement as well as for steadying of emotions and building up of character. Outdoor activities and open air oral lessons in various curricular subjects should be a regular feature of these special schools or specialised classes for the backward children.

A few words about the teaching methods may also be said. The backward have to be provided with adequate incentives to keep them busy. Whatever is taught should make a constant appeal to their motives so that it becomes purposeful to them. The purpose must be really worthwhile—one which their intelligence can readily grasp. They require short and simple methods of instruction based on concrete living experiences with concrete materials. Verbal instruction

should be reduced in their case as much as possible. The use of educational excursions to places of historical, geographical, scientific or cultural interest for broadening outlook lending more enthusiasm to his work, dramatization, projects, play activities or games, and other audio-visual materials will be very profitable. The use of audio-visual aids such as pictures, films, charts, models will help them to build up a fund of useful knowledge whose meanings are clear to them.

One of the principles of good teaching methods with the backward is that their self confidence should be slowly built up through habits of success. The teacher of the backward child should lead him very slowly, making sure that each step is thoroughly mastered before the next is introduced. Trying to cover the ground too fast only creates confusion in his mind and discourages him completely. This discouragement will make it practically impossible for him to learn even what is within his powers. This necessitates individual instruction in smaller groups and individual attention to be paid to such matters as health and social conditions. Taylor regards the discouragement more fatal than the dullness of intellect. She says, "Even more fatal than that is the accumulation of all those deadening influences which tend to stagnate still further the slow-moving erratically flowing streams of mental activity—the lethargy, the indifference, the positive aversion which arise from compulsory pre-occupation with uncongenial tasks: the discouragement and the break-down of confidence which come from constant failure, erecting insurmountable barriers to progress and blunting the sharp edge of understanding". (26 ; 71)

Connected with the problem of suitable teaching methods is that of having *suitable teachers for the backward*. The backward class needs teachers of exceptional efficiency and wide resources, and not those who are less experienced, less competent and less progressive. A good teacher for the backward is a man of practical rather than academic inclinations, with interests that are concrete rather than bookish, and a talent for manual work and artistic expression rather than for what is merely literary or scholastic". (9 ; 111) Such a teacher comes down to earth : mixes with his pupils on sympathetic terms, and deals with them as individuals. He needs to have great patience, and a firm determination never to be discouraged, while at the same time clearly recognising the child's limitations. Moreover he or she respects every child. If he or she looks down upon the backward child as being inferior, because he will not attain what the average child can, then he cannot give him what he needs and is likely to do him real harm. A backward child needs praise, continuous help, sympathetic consideration of his difficulties and sustained interest on the part of his teacher. He accepts the child's limitations but he knows that he is not so deficient as to be entirely without ability or useful qualities. His attitude should be at once human as

well as scientific. Again, a good teacher of backward children is a leader, and a diagnostician rather than a mere instructor, a ruler or a law-giver.

It is only such a teacher who will be able to introduce the newer methods of instruction and who will have the courage to scrap what is traditional in the ordinary curriculum without scruple, and who will remember that dull children need more practice than normal children for the development of any skill, that in their case the gradient must be gentle and not so steep as with the ordinary child, and whatever is presented should, if possible, be presented in a form allowing either for visualisation or manipulation.

A few words may be said about arranging the school time-table. In the time-table for the backward class, the old lines of demarcation between one subject and another should be dropped or cut across. The syllabus, to a large extent, will have to be planned in terms of projects rather than of subjects. These projects should be concrete tasks or topics emerging out of the child's natural interests and every day life such as 'our food', 'our health', 'people who live in our neighbourhood', 'our festivals', 'our city', etc.

The same flexibility should characterise other aspects of school organisation for the backward children. The school should be so organised that there is plenty of activity and reasonable freedom of movement and a 'free discipline' for the backward pupils. It is necessary that a proper system of recording is maintained. Each child should have an individual progress record and an up-to-date case history. The results should be systematically recorded, on the basis of objective tests.

We have seen that physical defects and bodily ill-health may form a contributory factor in backwardness. Therefore, a special medical check-up of each backward child should be arranged for, at the outset and facilities should be available for remedying the ailments or defects so discovered.

Irregularity in attendance is frequently an important causative factor in some cases. Hence it is necessary that attendance is enforced and an enquiry should be made into the lapses. Every attempt should be made to remove the causes when discovered. In this respect, a cooperative effort on the part of teachers, parents and medical officers, is needed. If there are emotional factors in the home causing irregularity in attendance, the help of a visiting teacher or a social worker needs to be sought.

This brings us to the problem of dealing with backward children who have temperamental and emotional difficulties and mental conflicts. No effort should be spared to bring about their readjustment in the home and in the school. Parental education which aims at changing wrong parental handling, a system of social service which

aims at improving the material and social environment at home and outside, can go a long way in such cases. The child guidance clinics play a vital role in this area to help the backward child.

What about the children who suffer from specific difficulties in specific subject-areas? In such cases of specific backwardness, remedial teaching has proved profitable. The remedial programme has to be planned "according to the deficiencies revealed by the diagnostic tests in the various processes, steps of learning and the various elements constituting the subject".⁶ (25 ; 71) In the case of a child who is found to be 'word-blind' and has difficulty in reading, correct visual habits have to be built up so that the particular difficulty is overcome. Similarly, 'speech sounds' have to be built up in the mind of a child whose spelling mistakes are due to 'word-deafness' or to an inability to comprehend the symbolic meaning of spoken words. A sound programme of remedial teaching will develop each backward pupil to the limits of his or her potential ability rather than pull him towards the similarity of achievement as attained by others. At best it is an individual matter with diverse standards of achievement to be attained for different individuals.

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EDUCATING THE GIFTED CHILD

15

It has been emphasized by Psychologists and Educationists alike that the gifted child is getting very little attention in the educational set-up as compared with the attention given to normal or deficient children. This allegation refers to Western countries and to the provisions made for the education of the gifted in that set-up, more so to the United States of America where education has made advances far enough to recognize the needs and difficulties of handicapped and disturbed or deprived children. A great deal of time, money and energy is being spent on providing special facilities for such children. The handicapped or deficient children attract attention of the educationists and others because of the defect that they suffer from or by their inability to keep pace with the normal children. The mere fact that they lag behind in class is enough to attract attention of the teacher. On the other hand a gifted child fails to attract the same attention simply because he can keep ahead of the average child in the class. He can do the tasks expected from him in the class so that, the need for special attention is not felt acutely.

Who is a Gifted Child ?

Before going into the type and amount of work done by way of special education for the gifted child, let us see what we mean by the term—gifted child. Who is a gifted child ? How do we identify him ? The concept of giftedness includes intellectual superiority as well as special ability or talent in other fields which may not necessarily involve intellectual superiority. Such talents or abilities may be exhibited in art, music, dance, drama, leadership, mechanics, science, or social relations. Thus the gifted child is the one who exhibits superiority in general intelligence or the one who is in possession of special abilities of high order in the fields which are not necessarily associated with high intelligence quotient.

The above definition brings out the fact that there are many factors which enter into the making of a gifted child. His environment and the enrichment of environment determines, to a great extent, the development of the abilities and the talents that the gifted child may possess. Surveys have been made of the gifted which have often brought out the importance of early environment by bringing out the number of those children who were gifted in the beginning but could not develop their special talent due to the mere lack of opportunities for stimulating the ability. The same situation is

responsible for the significantly high correlation between the high socio-economic status of the family and the number of gifted children. It is not right to conclude from this correlation that the gifted children are more often born in the upper socio-economic level families. It is more logical to infer that such homes are able to provide the stimulating environment which bring out the abilities and talents of these children. The same talents and abilities often do not get a chance to develop because of the ordinary or poor environment provided by the average or poor families.

The concern shown over the screening of gifted children is related to the philosophy that the maximum growth and development of all children should be the ultimate goal of education. It is not enough that education should provide opportunities for the maximum development of the potentialities of each child but should also keep in mind the fact that each child develops emotionally, physically, mentally and socially at a different rate. This rate may be fast in some cases and slow in others. Provision of right stimulation at different levels of development provides the right background for the giftedness to develop. Stimulation at an inappropriate stage may lead to strain and unnecessary stresses for the child rather than an appropriate opportunity to develop his potentialities.

Psychological literature has drawn a distinction between those with high intelligence and those with a special ability. Studies have been conducted on intellectually gifted children and children with special talents separately. In studies of the intellectually gifted the primary question is that of a distinction to be drawn between the average and the gifted child. Most of the studies have considered children with 125 I.Q. and above as the gifted children. This, however, is not a universally accepted demarcation line. There are psychologists who raise this limit higher and consider 135 I.Q. and above as the dividing line while there are still others who feel that everyone with an I.Q. of 110 and above should be classified together and considered as gifted children.

Intelligence test alone, however, is not enough as a screening instrument. There is a need to administer aptitude tests for different areas; anecdotal records often help to spot out a latent gift yet unexplored. Often self analysis gives hints of a gift that the child may be having. His emotional, social and physical characteristics are often indicative of his gifted nature.

A gifted child has more or less the same basic needs to be loved, accepted and appreciated. It is often the case that he is ridiculed for his queer interest in a particular area as a result of which he often shows resentment in his general behaviour and certain personality characteristics. When opportunities for the satisfaction of his needs are provided to him a gifted child shows an attractive, well-balanced

and contented personality. A child with superior intelligence is often imagined to display an over-confidence in his ability, awareness of his superiority and a snobishness of some kind. This image is not met in reality. Gifted children, on the other hand, often show antagonism caused by the social rejection which in its own turn is due to the special gift that they enjoy.

As already mentioned, gifted children are not necessarily superior in general intelligence. Therefore, their general performance may not be of such a superior quality as that of a child who belongs to an intellectually gifted category. A gifted child shows superior performance in the area of his giftedness only. So he needs to be observed and studied carefully in order that his gift may be spotted out. While an intellectually gifted child readily catches the attention of his teacher, the gifted child in other areas often escapes her notice unless the teacher is looking for his special ability.

In our system of education, instead of being screened and given special attention, a gifted child is often labelled as a problem child and referred to Child Guidance Clinics. Instances are plenty where children with intelligence quotients as high as 145 and 150 have been referred to Clinics as problem children. A typical case registered at one of the clinics recorded an I.Q. of 153 (when a test of intelligence Standardized for American population was used which means that his I.Q. may be much higher). The child was going to a below average school situated right in the heart of a big town with no facilities for games, recreation or play. The school did not have even a play ground.

The staff of the school was drawn from a very mediocre section of the intelligentia. During a couple of meetings that the Clinical Psychologist attended, the staff members did not show much understanding of children or imagination in dealing with above average group. Class room work was of a routine type with no challenge involved for the superior child.

At home he was the eldest child of a businessman who lived in a congested area. The house was large but occupied by a joint family. The portion falling to the lot of this particular family consisted of two rooms with a small open space used as kitchen. Besides the other factors responsible for his problem behaviour, the physical set-up of the home and school by itself had no elbow room for the child; there was no opportunity for him to develop some of the talents that he might have had. Detailed work with him brought out the fact that mere monotony of life and lack of excitement in daily activities was leading him to do things which were labelled undesirable by his parents, *viz.*, going for cycle rides. He was not allowed money for this purpose so he was solving his difficulty by stealing money. He made use of his high intelligence in devising excuses and explanations of such high logical order that for months the parents could not even suspect him of stealing the money.

An interview with the parents brought out the complaint that he asked too many questions. The father answered the ones that he could but often he asked funny questions which the father could not answer. Under such circumstances the father thought it best to ask him to shut up and often told him not to talk too much. Thus, it was found that a brilliant child was labelled a problem child and denied all opportunities of developing the capacity that he possessed, viz., superior intelligence.

Children with special talents have more difficulties at home and with their environment because their talents are queer phenomena and, sometimes, may come into conflict with certain social conventions. A case in point is a boy coming from average middle class family with an I.Q. of 145 and a special aptitude for mechanical work. In absence of proper facilities for development of this talent the child started opening up the mechanical things like watches, machines etc. at home. This was inconvenient and too expensive a hobby for the family so he started sitting at a cycle shop watching the repairs for hours. The middle class standards labelled this behaviour as purposeless and waste of time. Restrictions led to his attending such operations on the quiet and stealing money for the purpose. During the work at the Guidance Centre the child expressed his desire for going into a workshop or an occupation which would give him a chance to develop his interest in mechanical line. The family standards dictated that a mechanic's job is below their status and that he should go into professions like law or medicine. Here was an example of a real talent being wasted because of the two factors, i.e., lack of opportunities for developing the talent and the social prestige assigned to different occupations.

History of Education for the Gifted.

The provision of special education for the gifted children goes as far back as the history of education goes or even earlier, ever since reading and writing began. The fact has its evidence in Plato's Republic which had plans for special education for all the different walks of life. The ideal Republic was the first plan to explicitly formulate the idea of special classes for scholars, warriors, artisans and labourers. A similar indication one gets in the origin of caste system in India. It provides for categorization of the entire society into groups with particular specializations. *Brahmins* were supposed to specialize in education and be intellectuals of the society; *Kshatriyas* to specialize as warriors and be responsible for the protection of the group. *Vaishyas*, to specialize in business and commerce and *Shudras* to serve the other classes and look after their comforts. Obviously, under these plans some kind of screening was implied. Children who were supposed to have the abilities, talents and skills were to be sorted out and given the kind of training best suited to them. This, it was reasoned, would save human wastage and tend to make the best use of human resources.

The evidence for special education, we get in our old system of education as well. A particular *Guru* taking only a few select individuals for his guidance again involved rigorous testing (may be the testing was different in nature from the one suggested during modern times). The hard tests assured proper selection of the exceptionally talented pupils only. The small number in a group made individual programmes for the talented possible. It is a common legend that some of the famous artists and musicians specially—living as late as in the nineteenth century—used to take only one pupil during their entire life. This would mean devoting all his energies to the teaching of one pupil, with the possibility of individual variations in the teaching technique to fit with the strong and weak points of the taught.

In literature we get repeated mention of individuals who have been specially talented and who have been individually coached by either their parents or tutors. Life stories of geniuses like John Stuart Mill, who never knew when he learnt Greek—he was told that he had a perfect command of it by the age of three—are an indication of the marvels that talented people can make with proper guidance and education given at the right age. However, these are some of the accounts of education of the talented on individual basis or on a small scale. Organization of a special class or a special school for the gifted is of much later origin. It came much later due to the mere fact that when average schools were smaller in size the education of the gifted did not suffer any set-back. The same teacher could pay special attention to the gifted also and thus channelize his extra ability, energy and talent. The problem became acute with the increase in the size of school and number of pupils in each class. With a large number of students to teach, the teacher found it difficult to provide challenging enough tasks for the gifted. A few backward cases in class took more of his attention than the talented and gifted ones. Preoccupation with the average and backward children, on the part of the teacher became a factor in the neglect of the gifted. This neglect and its significance remained unrealized because of the ability of the gifted to carry on the activities demanded of him. The backward child drew attention of the teacher because of his lagging behind the class and finding it difficult to complete the tasks assigned to him. This was not so in the case of the gifted.

The earliest recognition of the gifted in the United States of America is indicated in the form of the promotion plans used in the city of St. Louis as early as 1862. Under this plan it was suggested that the promotions be made every six months to start with, then they were made at intervals of three months and still later promotion were made every five weeks. This plan was based on the hope that frequent promotions would provide a chance for the gifted to get recognition for their talent. In 1886 New Jersey experimented with the different groupings within a class. Children were put in different groups according to their abilities and talents. Each of

these groups was allowed to advance as rapidly as it could. This provided opportunity for each pupil to achieve to the maximum of his ability and potentiality. In Europe we get a record of special classes for the gifted in the Cambridge plan originating in 1891. The plan was spread over the section of school extending from fourth to ninth grade. There were two parallel plans. Under one the student could complete the required work in six years and pass the six grades, the other plan however, allowed the full course to be covered in four years so that the gifted child could save two years of his education by completing six grades in four years. Students were allowed to change from one plan to the other after passing three grades. This meant five years in all for passing six grades. This last provision gave an opportunity to the gifted child, wrongly placed with the average, to change his group and work with the gifted and also for an average child, wrongly classified as gifted, to revert back to the average plan and move according to his own speed. There are references, though very rare, of other methods that were used for the education of the gifted. These methods are in use in present day programmes as well viz. vacation schools, double promotions, credit by examination, individual instruction, project method and special classes.

As regards special classes it is reported in literature that probably the first special school for the gifted children came into existence at Worcester, Mass. in 1901. Pupils for this school were selected from the entire city population and placed under teachers with superior talent specially selected for this purpose. Even in this early beginning the United States does not report a great many schools for the specially gifted. Heck (15) reports that in 1948 only 15 cities had special schools or classes for children with high I.Q. These institutions registered in all 4080 pupils in elementary schools and 16,197 in high schools. Altogether there were 622 special teachers to run these institutions. This gives a 33 : 1 student teacher ratio.

Coming to the history of special education for the gifted in India, one does not find any school planned with this specific purpose. However, chance provision exists in the form of public schools and some boarding schools. These schools were originally meant to cater to children coming from the upper socio-economic status families and sometimes children of the Royal families. Even today this criterion of selection for these schools operates indirectly. The fees and expenses of these schools are significantly higher than those incurred in average schools. Thus only a few rich parents can send their children to these select schools. Once admitted to the school, usually, the child follows a more enriched curriculum than he would in an average school. The drawback with this type of selection is that every child admitted does not belong to the gifted group. All the same the school provides richer curriculum for the gifted ones.

Recent developments give evidence of the attention being paid to the education of the gifted by State and Central authorities. Introduction of merit scholarships helps to bring out the gifted children who can be placed in these public schools at Government expense. There are a large number of such scholars who come from middle class families. Left to themselves this enriched educational programme would not have been possible from them; the plan of merit scholarship, opens up for them the door to these facilities.

A few private schools and classes may be reported here and there but they are again designed for the education of the children coming from a special type of families rather than those who are specially gifted. It is by chance that the gifted ones in the group can take advantage of the better type of programme. The situation makes it very clear that the education of the specially gifted has yet to make its history in India.

Problems of the Gifted Children in Average Classes. Gifted children when allowed to attend regular classes face problems of their own as well as create some for the fellow pupils and the teacher. An average class and its programme is planned for a child of average ability. The same programme given to a child with superior intelligence or a special ability tends to deny the opportunities that he needs for the full development of his talents. Keeping him tied to such programmes amounts to giving him a handicap and not full and adequate facilities for education. Any democratic set-up aims at providing equal facilities for all the members, denying special programmes for the gifted means denial of equal opportunities.

A common problem to be anticipated with the gifted children while in the regular class, is the possibility of their development. Sooner or later a gifted child becomes conscious of his talent and can develop conceit without realizing it. The possibility of such a situation increases if they are allowed to be in the same class with the children of average ability. In ordinary class rooms the contrast between their ability and that of an average child becomes obvious to them very soon. It is also quite customary for a teacher to entrust bright students with a few of the average ones to help them in their studies. Such conditions become still more conducive to conceit. A teacher with thirty children on his hands with a few bright ones may find it hard to bring out the implications of such a responsibility to the gifted.

On the other hand this situation creates some problems for the average children too. With this group out-shining them all the time can give them feelings of backwardness and inferiority. Often it can lead to frustration due to continuous sense of failure experienced by them. They are lagging behind most of the time while the gifted are occupying the highest positions. It deprives the average child the

experience and the pleasure that he would have otherwise got by being at the head of a class.

In the absence of a special programme of education for the gifted it is customary in our educational system to allow double promotions and place the bright child in a senior class. This acceleration is based on the belief that he will be able to find a challenge in the work of a senior class and utilize his talents. Contrary to this expectation a bright child when given accelerated promotion is placed out of his own group with respect to physical, social and emotional development. As a child goes higher in the ladder of development we expect him to change in his interest patterns, activities and sometimes in behaviour patterns as well. A child who shows higher intelligence when placed with children who are higher on the developmental continuum may find himself out of step in other activities and interests. Under these circumstances it is a better proposal to provide an enriched programme for these children while they are allowed to share the experiences of children who are at their own level of development.

In the absence of a clear concept of enrichment it is common in our schools to entrust more work to the gifted children. It is to be understood that being overloaded with a mediocre type of work is not enrichment for a talented child. Routine type of work or work that is not quite challenging for him can have the effect of monotony which is more harmful than advantageous. A gifted child needs tasks which he can easily explore and complete independently. He needs satisfaction for the urge to investigate for himself. Enrichment would automatically mean avoidance of repetition and drill. A programme for an average child has a certain amount of drill involved in it while that for a backward child has provision for much more drill. On the contrary a programme for the gifted should avoid all drill. Drill tends to irritate them and thus decrease their output. They need easy reading materials which they may follow and appreciate independently.

Lack of enrichment of educational programmes for the gifted runs the risk of giving rise to bad social habits in the bright children. Work given to them under ordinary arrangements is unexciting and unsatisfying. So loafing and other anti-social acts can be quite easily indulged in stealing and running away from home for the mere fun and excitement of it. These children often become disciplinary problems in classroom as well. The reason becomes obvious when we understand that the teacher usually plans work for an average child. Suppose he anticipates that a particular task will take an average child half an hour to complete. The same task is assigned to the entire class. It is natural that the bright and gifted child would finish it in say twenty minutes. He has ten extra minutes on his hands. He faces the problem of utilising them in an interesting way.

It is rare that the things that entertain him are very much appreciated by the teacher. They do disturb peace of the class room and create problems of discipline for the teacher. They indulge in all these activities because of the fact that they have surplus energy and time which they must spend and when spent thus it runs the risk of getting into conflict with the social discipline.

A corollary to the previous problem is the danger of the teaching being so arranged that it would miss some of the aspects of the development of an individual. The child, specially the gifted child, needs opportunities for an all round development of his personality. Enrichment of the educational programme, if aimed entirely on the academic side, will undoubtedly ignore the development of the social, athletic or emotional aspects of personality.

A further problem crops up here. Considering the fact that each child maintains a different rate of growth and development, some may develop in one aspect earlier and faster than others of the same age group. There may be others who are slower in their general rate of growth. An ideal programme has to meet the demands of all these individuals which amounts to saying that there should be individual attention paid to every child. The programme should be suitable for individual needs, demands and nature of development. It is recommended in case of average children as well but the task becomes huge taking into account the numbers involved. The case is different when the education of the gifted is concerned. In the first place the number goes down considerably and secondly they, being the cream of the society, any special opportunity provided for their education would make significant contribution to the society itself.

For and Against Special Classes. In the foregoing sections an attempt has been made to place before the reader a true picture of the educational facilities provided, and possible, for the gifted children. The obvious conclusion of the discussion has been the importance and need for special classes and schools for the gifted. From this stress on special education, it may look as if it has been, more or less, taken for granted that the special classes and schools are universally accepted by the educationists and psychologists. In reality the situation is not so simple as that. There is a very lively controversy about the desirability of special education for the gifted. There are valid points raised on either side of the issue. Therefore it would be in place here to have a glimpse of the arguments offered for and against special classes.

Special separate schools and classes for the gifted are proposed with certain advantages in mind. These advantages are individual i.e. to the gifted child himself and social i.e. to the group at large. Some of the points advanced in favour of special classes are:

1. In a special class a superior child is provided with an opportunity to work according to his superior ability. In an ordinary class, meant for children of average ability, the teaching is adjusted to the average child so that a child of superior ability is also expected to move at this rate which is significantly slower for his ability. Thus the work of an average classroom keeps him working under a handicap. Moreover, in ordinary schools the superior are taught by average teachers while in a special class they would have the advantage of working under teachers of superior calibre. Thus a gifted child when kept in a regular class suffers a double disadvantage. He moves at a slower speed and does not get the benefit of superior teaching. A group of gifted children has the advantage of providing rapid development for each other, through mutual stimulation.

2. Kept with children of average ability a gifted child has the tendency of developing careless habits. The tasks given to him are too easy for his ability so that he may scorn at them and refuse to do them. Often such children fail to exert themselves, utilize their spare time out of school, often in mischief, and become the malcontent of the society. Under these circumstances the superior talents are a mere waste for the individual as well as for the society. A special class offers opportunities to the gifted for challenging work and develop his potentialities to the maximum.

3. In the absence of special classes the gifted are often permitted more frequent promotions, which has the disadvantage of putting younger children with more mature and older children. A child who is superior in intelligence may not necessarily be also superior in sociability and other aspects of development. Also double promotion takes him off from one group and puts him into an absolutely new group which demands special adjustment from him. The gifted, thus, is faced with the tremendous task of adjustment to a totally new group. A special class gives him the opportunity to move with his own group, passing grades at the normal rate while developing his abilities to the full.

4. Besides giving challenging work to the gifted and keeping them occupied for most of the time, special classes have the advantage of adapting the school work and teaching techniques to the special abilities of the gifted.

5. Superior children when kept in regular schools run the risk of social maladjustment. Owing to lighter work they stay idle, part of the time. Their alert mind therefore, seeks outlet along other channels. Many a truant and delinquent have proved to be children of superior ability. They have turned away from school to avoid monotony and boredom of the average routine.

6. A gifted child put with others of his own class realises that there are others who think as well as he does, who discuss as well

too and who can convey their ideas in as good a style as he can. He feels enthused to compete with these fellow gifted individuals and is challenged to put in his best efforts. In doing so he is not forced by outside pressures ; it is his own inner self that urges that stimulate him to do so. A discipline from within is definitely superior to the external pressures.

7. Special classes also provide opportunities to develop leadership in various lines. In the group there may be children specially gifted in poetry, painting, mathematics or other branches of knowledge. Special programmes of education help them to develop these talents and prepare future leadership in the field.

8. As Goddard (12) has pointed out, gifted children "are made of finer stuff than the majority". They are more sensitive, more alert and quick in their thinking. Putting them together with the average raises classroom problems. Proper stimulation of the superior and average group when put together can be a problem by itself. Treatment and handling of the two, so as not to hurt the sensitive gifted, creates further problems of dealing with the class.

All these reasons in favour of special education justify planning of special schools or special classes for the gifted children so that they may get full opportunity to develop their special abilities and potentialities. This, however, is one side of the controversy. There is an equally strong group of psychologists and educationists who advocate keeping the gifted in the regular schools and not isolating them into special groups. They have their reasons too. We may discuss them as points of criticism of the movement to establish special schools for the gifted.

1. The most basic criticism of the plan is that it is undemocratic. The critics put forward this point when they define 'democratic' by saying 'equal opportunity of education' should be provided to one and all. The point does not hold water if one were to analyse the meaning of the term democratic. A real democratic system should give 'equal opportunity' keeping in mind the ability of each individual. Providing average facilities to the gifted child amounts to lack of provision and neglect, thereby making it undemocratic.

2. It is often said that if taken away from the regular classes the gifted children tend to develop conceit. They become conscious of their superior ability and thus fail to develop modesty as a personality trait. Superficially this may sound logical but going a little below the surface, one would realise that this is limited to the initial selection only. Once they are put with the other children of their own calibre, they lose the opportunity to develop conceit. On the contrary they have more possibility to get conceited if they are allowed to stay with the average children. They are always superior among the average which is more conceit promoting than when they

are in a situation where they find others achieving much better than they do.

3. Closely related with the second is the consideration that special classes give rise to a kind of intellectual aristocracy. Gifted children when isolated in special classes gain ideas of superiority and of being a class by themselves. A counter argument to this is that there is more possibility of developing an aristocratic attitude when the gifted are left in the same classroom and when they are regularly achieving better than the average children. Once taken out of the group a gifted child cannot show his superiority and be assured of it so repeatedly and consistently.

4. Allied to this comes the argument that by separating the gifted we are increasing the possibility of the average children developing jealousy for this class. It may be argued and has been proved through observation that the possibility of an average child developing jealousy for the gifted is more when the two are allowed to stay together and compete with each other. This gives a chance to the gifted to outshine the average and thus rub him on the wrong side. Once the gifted are taken out, an average child competes with the other children of average ability. He may get defeated at times but he gets ample opportunity to do well too. This gives him more satisfaction than a feeling of jealousy.

5. Another argument advanced against special classes for the gifted is that an average child tends to lose when the gifted are taken out. When working with the gifted he gets a chance to learn many things and get stimulation of high order. Withdrawal of the gifted, therefore, deprives the average child of rich stimulation.

Against this argument one can say that over stimulation of a child with mere average ability does more harm than good. It puts him through stress and pressures which lead him to frustration when he cannot meet the standards set by this stimulation. Allowed to work at his own pace and competing with others of his own level of ability is much healthier and satisfying for the child.

6. Another class of critics have taken the issue that when grouped together the bright children tend to over-work and thus spoil their health. It has been established through numerous studies and surveys (29) that a gifted child is healthier, mentally and physically. So it is logical to expect that he is capable of achieving more than the average in the same length of time. He does this without extra mental strain. It is possible that the larger output of work makes the critics feel that the gifted child must have put in too much effort which goes contrary to the available evidence.

7. Still another fear expressed by those who are against special education of the gifted is that such programmes deprives the society of superior leadership. While working with the average

children, the critics argue, the gifted get a chance to act as a leader and get training in leadership. Thus the society is provided with future leaders. The argument, however, seems to lack the understanding that in a special class each child is a potential leader in one walk of life or another. One may be potential poet, another a playwright and still another a mathematician or a scientist. Under a special programme it is possible to provide enough challenge to their potentialities and give much better leadership than would be possible if they were kept tied to the average type of work without exploring their skills deeper.

8. A couple of other criticisms are directed at some other aspects of the special education rather than the desirability of such a programme. One of these criticisms is that the tests and other techniques used to screen out the gifted are not quite reliable and perfect. This may be a valid drawback of the techniques used but in a programme of special education there ought to be provision of a change from the gifted to the average group and vice versa. This can take care of errors made in the screening of gifted children without any loss to their education.

9. The last criticism levelled against special education is the high cost of such programmes. This point may be of special importance to the workers in India. The critics argue that when there is not enough money for the education of the average child, such expensive programmes for the gifted is a little undemocratic. One can argue on the other hand that considering the advantages of such programmes to the individual and specially to the society, expenditure of such huge amounts may be worth incurring. Once the desirability of such programmes is established the funds can be procured and expenditure justified.

Facilities for Special Education and Its Philosophy.

It has been the experience of the workers engaged in special education that it is comparatively easy to draw an emotional response in favour of the deprived, disabled or retarded children than it is to get public attention drawn to the gifted children. As they are superior and well above the average, the public does not feel that they need extra care. On the contrary it is presumed that they can look after themselves. As they are not deprived and are not capable of making an emotional appeal to the public, the educationist concerned with the education of the gifted has to collect information about the gifted that would appeal to the public. People need to know how many gifted there are in the total population, what kind of education they receive, what happens to those who receive special education and to those who do not and such other factual data to convince people of the desirability of a special programme of education for this group.

The biggest pitfall of this type of information exists in the follow-up studies. In United States where special education is available for this group the lack is felt in the form of tracing the gifted children after they have gone through this programme. A common complaint is "We hear of so many superior children during high school but nothing of them afterwards." It is important to have details of their career, success and the causes of success or failure; so that the case for special education may be built on facts. Terman (29) and his colleagues are making a longitudinal study of one thousand gifted children. Another follow-up study has been conducted by Sumption (28) of three hundred gifted children, but many more such studies are needed to convince the public of the usefulness of special education for the gifted.

As far as the design of these studies is concerned the approach is very easy. These are the children whose parents should be proud of them and they have nothing to hide as may be the case with the retarded or delinquent children. They come from good home background so that tracing them and getting the required information should be quite easy compared with studies conducted on other populations. It is desirable that these follow up studies should be so common that each community, school or class offering a special programme of education for the gifted should be able to give detailed information about each one of their pupils even after he has entered his middle age.

In India we do not yet have even a proper screening programme for the gifted but once we develop along this line then the studies on basic data about the gifted will assume great importance in any national programme for the education of the gifted or retarded children. Indian educators will have to meet the same, if not a greater, challenge as the one that their American counterparts had to face.

Selection of the gifted is basic to any programme of special education. The selection is usually based on either a mental test or an achievement test; teacher's reports and the achievement record of the year are the other data on which such a selection is usually based. The psychological tests as they stand today, cannot be called perfect tools of such a selection. This often becomes a problem as well as a point of criticism against any programme for the superior children. This, however, should not be considered a point which cannot be justified and for which there is no remedy. A remedy can be suggested in using more than one criterion for selection purposes. It can be suggested that the selection may be based on a combined report of a number of tests, viz. a mental test, an achievement record and teacher's report. In doing so, one can argue that the drawbacks of one tool can be checked by the other.

It should be remembered that this may not yet be considered a good enough precaution against faulty selection. There may be occasional cases of wrong placement ; an average child may, by an error, be placed in a class for the superior while a superior child may run the risk of being placed with children of average ability. One has to be prepared for occasional errors of this type and make the programme of special education so flexible that the wrongly placed children can change groups even at a later stage. A placement once made should not be considered final. Each child is to be observed continuously and allowed to change whenever an error is detected. This type of flexibility can further help to overcome the imperfections, that may be, in the psychological tools used for the selection.

Another point where the special education programme may meet its failure is by the development of conceit among the children or among the parents of these children. Unless special care is taken, it is very easy for the gifted children to develop an attitude of conceit; this should be a clear indication of the failure of a programme. The teachers, parents as well as the children themselves must understand that special programme is meant to give these children a chance to develop their abilities to the full. It is just a device of better grading and nothing else. When understood thus it will serve its purpose and lessen the risk of the development of conceit and prejudice.

Once a special group has been organised the multidimensional problems of curriculum, methods of instruction and the equipment needed crop up immediately. The very obvious question that a teacher faces at the outset is, "What shall I do with them?" There are programmes where fast promotion is used as the only technique. This does not help the gifted child in an all round development. Finishing an average type of curriculum in shorter time span does not give the gifted an opportunity to explore his talents. In other schools enriched curriculum is used as an alternative. Enriched curriculum has the advantage that the child passes one grade a year—at the normal rate—and during that year, besides his usual work, has the advantage of exploring his talents and developing other special skills that he may possess. Moving through the grades at normal rate gives a chance to the children to learn side skills like type-writing, shorthand or classical languages. This expectation, however, implies that the enriched curriculum has the provision for practice of such skills.

An adjustment is also required with the techniques used for the instruction of the gifted children. Usual drill that is associated with the education of the average child occupies a secondary position in the instruction of the gifted child. A gifted child needs more experimental work with new methods rather than with the old routine ones. A few techniques that can be used with success are :

Dramatization: Children with superior ability enjoy learning through dramatization, much more than the average child can. With their imagination so well developed, dramatization of certain incidents

is easier for them, enjoyable and at the same time makes things more real to them than the mere reading about them.

Student Research; This method has also proved successful with the gifted and has been enjoyed by these children. Instruction under this method gives a particular subject to the group asking them to prepare the details about it and present each aspect regarding the topic. Thus these children are left to search for the required materials relevant information and the details independently rather than giving the details in a classroom lecture by the teacher. Independent work is much more challenging to them and enjoyable than the ready made information given to them in the class.

Project method: A project given to organise with the help of the teacher also works well with the gifted children. It is a common technique to be used in the education of the gifted and talented children. When given the project of staging a Shakespearean play, they are left to find out for themselves the types of costumes used during the time in which a particular play is set. They take over the responsibility of tracing the dates, the type of theatres in vogue those days and the style of dramatization. This independent search is rewarding and a satisfying experience for the gifted child. Moreover, co-operation in this type of project means occupation with more than one type of interest and skill.

Excursions: Excursions and outings is another type of technique working well with the children with special gifts. Exploring the geographical surroundings and learning geography through personal experience is more meaningful to them than reading geography books. Visiting places of historical importance is of more significance to them than memorizing the dates of historical events. These children are adventurous in spirit, excursions and outings serve the purpose of satisfying their spirit of adventure together with giving them the knowledge.

Connected with the curriculum and techniques of instruction is the question of equipment. Special programme of education for the gifted children means more facilities, opportunities for development along different directions and therefore more elaborate provision for equipment. They need more equipment as well as varied equipment. They are capable of working along more lines than one and also at the same time they like to work with more than one type of equipment. So this item becomes doubly expensive for any management.

The greatest consideration in planning a programme of special education for the gifted children needs to be given to the selection of teachers. The success of the programme is entirely dependent on the teachers conducting this programme. It is not enough for these teachers to be trained in the art of teaching, they have to have a thorough understanding of the aims of such a programme and the

skill to put them into practice. It is these teachers who can help students to develop their abilities without developing conceit, it is these teachers who can inspire and stimulate them and it is these teachers who can help them develop interest in diverse directions. To be able to fulfil the functions of special education these teachers must have the following qualities besides the training in the art of teaching :

- (i) Superior intelligence so that they may match with the superior ability of their pupils. They are supposed to satisfy the queries of the gifted, they can do so only if they themselves are gifted.
- (ii) Rich personality with interest in different activities. Only a teacher with diverse interests can be expected to stimulate the children to develop interest in different activities.
- (iii) Curiosity : A teacher may not possess ready knowledge about every subject but the one with the curiosity to know is better fitted to satisfy the curiosity of the gifted children.
- (iv) Sensitivity : The gifted children are known to be more sensitive than the average children. As Goddard (12) has said, "they are made of finer stuff". A teacher with sensitivity can understand the feelings of such pupils much better.
- (v) Information : The teacher of the gifted needs to possess more information than the one entrusted with the teaching of the average children. Besides the extensive knowledge, if he has the attitude to acquire more knowledge it is still more helpful.
- (vi) Ability to inspire and stimulate the students : A teacher possessing all the above qualities is not necessarily equipped with the ability to inspire and stimulate the children. Very often it so happens that the teachers who are experts in the field find it hard to convey their knowledge to the pupils, such teachers are not of much use in a programme for the gifted children. On the other hand a teacher who has the abilities mentioned above and the skill to inspire children put under his care is bound to be a good teacher of the gifted.
- (vii) Tolerance of criticism : This quality is doubly helpful to the teacher. Firstly the gifted children are good at criticism, and if the teacher cannot tolerate criticism himself he will hinder the expression of valid criticism by his pupils. In the second place the quality itself is good for the children to develop. Usually due to over-confidence in their ability they are not used to criticism from others. Good criticism

is known to improve the skills. A child capable of taking the criticism will be better fitted for self-improvement. A teacher possessing the quality is in a better position to help children develop it.

- (viii) Responsibility — Social and Professional : Such an individual will recognise his responsibility while taking care of the group as well as pass on the quality through his own example.
- (ix) Freedom from jealousy : The teacher of the gifted is always surrounded by superior ability and is always a witness to interest and skills in diverse areas. If he is not free from jealousy, he will tend to spend most of his time feeling jealous about the abilities of his pupils rather than appreciating them and encouraging them to develop them further.

Summary

In spite of the fact that the gifted children are an asset to the society very little attention has been given to their education. They seem to be the most neglected of the total group of exceptional children. By definition gifted children will include the group with high intelligence as well as the ones who may have a special talent or ability. The gifted can be spotted out of the entire group by use of Psychological Tests and other devices like teachers' reports and anecdotal records.

By way of history we get references to plans for special education in ancient classics and social systems more than is today existent in any country except for some work done in the United States. In India particularly there has been very little done along this line. Some work that is done has been done by mere accident. Special education for the gifted has many problems of organisation, method of instruction as well as the selection of teachers capable of conducting such programmes.

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Part IV

DEVELOPMENT AND ASSESSMENT OF PERSONALITY

16

Introduction :

Man's interest in personality is as old as his interest in the supernatural. Thus, some ideas about personality may be found in primitive folk-lore, myths and superstitions as well as in all the great religions of the world. In literature, since the days of the great epics, character-writers have presented interesting personality types. Ancient medicine in India and Greece had a theory of personality types.

Psychology of personality, however, is of recent growth. Though psychologists have been always concerned with personality, it was not till Galton and Freud that the study of personality became scientific. Psychology of personality, in a sense, is, thus, very old and, at the same time, has a brief history. In the last two decades, however, there has been a very rapid development in this field—in concepts, techniques, findings, applications, publications and number of workers. Because of the rapid rate of work and the variety of theory and techniques, it presents a challenge to any student in this field.

In this chapter we shall indicate some of the problems in defining personality and then go on to discuss the methods of studying it. The story of development of personality is a long one and only a bare outline will be presented here with an emphasis on determinants of personality and the processes involved in its development. This discussion will be followed by a brief description of some of the disorders of personality. At the end, we shall consider how personality factors may affect education. The objective of this chapter is to provide an orientation to the advanced student of educational psychology. Thus, the student will not find here a history of the psychology of personality, nor will he find the various theories of personality. The various considerations in typology and trait measurement have been omitted from discussion here. The interested reader should refer to some of the books mentioned in the list at the end of the chapter.

What is Personality ?

Definitions of abstract terms are difficult, because in a logical definition a reference has to be made to a more inclusive abstract

term, that is, to a class to which the thing under consideration belongs. The difficulty of defining personality or intelligence becomes apparent if one tries to find the class to which personality or intelligence belongs. In psychology, as in some other sciences, the trend is thus, towards operational definition, which avoids the difficulty indicated above. In defining intelligence one may point to a set of events which, under specified conditions of observation can be identified as intelligent behaviour. It is, however, difficult to do the same for personality, because, unlike intelligent behaviour which has more or less a clear boundary and is observable when certain operations take place, the set of behavioural events to which personality refers is not clearly delimited. Of course, the scientific study of personality is of recent development in psychology and so there is room for the explorer and the cartographer who will discover and map out the area of behavioural events to which the term personality refers.

There are various definitions of personality. Allport has listed fifty definitions, including one of his own, in his book on personality. In a more recent work on theories of personality Hall and Lindzey have considered the definitions of personality given by other contemporary psychologists like Jung, Murphy, Murray and Rogers. A careful consideration of these definitions shows that the differences are due mainly to differences in theoretical positions and methods. The advanced student of psychology may accept any one of these definitions. Thus, Allport's definition of personality as "the dynamic organisation within the individual of those psychological systems that determine his unique adjustments to his environment" is as good as any other. In actual practice, whenever one is observing over a period of time certain relationships in the ongoing activities of an individual's life and conceptualizing in terms of structures and forces within the individual, one is studying the personality of that individual. Psychology of personality, however, is concerned with the relationships that have been *scientifically* observed and can be *generalized* to hold for a class of individuals.

Methods of Studying Personality :

The methods of studying personality can be grouped, broadly, into three classes, namely, (a) clinical, (b) psychometric and (c) experimental.

(a) One of the oldest clinical methods of studying personality is through life history. As a tool in the hands of psychologists, life history is different from a biography. Whereas a biographer builds up the life of another person from the information received from various sources and builds up an image of the person which is not necessarily a true reflection of his personality, a psychologist collects the information from the person himself and makes no attempt to create a hero out of the person. The collection of personal information

is by no means an easy task. The method of seeking information demands that the individual is not placed under any kind of threat. The information that is sought for is not just about the achievements of the individual; the information concerns as much the processes that go on within the individual as the end-products. Deep feelings and impulses are involved in speaking about oneself to a psychologist. The task of a psychologist is, thus, very different from that of a biographer or a police officer. In order to collect good life histories, a psychologist requires special knowledge and skill. He can then handle the relationship with the individual more or less objectively and create the conditions for a relatively free communication of facts, feelings and ideas. The most important contribution in this respect has come from psychoanalytic theory and technique. Starting with free association as a method, Freud developed a highly sophisticated technique of treatment of persons suffering from psychoneurotic disorders. The core of this technique lay in handling the transference, resistance and defences of the person concerned. Personality of the patient is revealed not only in the facts of life, but also in the characteristic ways that resistance, defence and transference are used in communicating about the facts. Any student of personality who uses life-history to study persons has to encounter the phenomena of resistance, defence and transference. These are like the three sides of a prismatic lens through which the report of events of life is filtered. In order to use the tool effectively, the psychologist should know the prism well; otherwise, he may not know that it is the white light which emerges out of the prism in so many colours.

The psychoanalytic method of free association was developed by Jung into the clinical method of word association. This method uses a list of words, some of which are significant in the sense of being related to certain emotions and impulses like anger, fear and sex. Each word is spoken to the person and the person is asked to tell an associated word that comes to his or her mind. The reaction-time is also recorded and in the classical form, after the presentation of the entire list of words, the words are presented again and the person is asked to reproduce his first response. The associated words, reaction-time and reproduction are analysed to find the "complex" as originally used by Jung, or to study disorders of thinking and affect, as is usually done in the clinical use of the technique.

Perhaps one of the most sensational developments in recent times in psychology has been the so-called Projective Techniques in clinical practice and research. The two most popular among these techniques are the Rorschach and the TAT. The Rorschach technique was introduced by Hermann Rorschach and developed considerably by Bruno Klopfer and Samuel Beck. The technique consists of the presentation of ten cards in a fixed sequence. Each card bears an inkblot and the person is asked to tell whatever he or she sees in the inkblot. The responses and reaction-times are recorded. There is an inquiry after the responses have been given, not necessarily follow-

ing all the ten cards, in which information regarding the perceived object's location in the card is obtained, the qualities of the stimulus to which response has been given are ascertained, and, lastly, the nature of the percept is elaborated upon. Following this, there are some calculations concerning location, determinant and content of response. The entire record is then interpreted in terms of personality of the individual. The technique rests on the assumption that the inkblot is an unstructured stimulus on which a structure is imposed by the perceiving individual according to his or her personality—as if the inkblot is like a white screen on which is projected the reflection of one's own mind. The Rorschach technique is thus based on certain assumptions about perception and personality. Some of these assumptions have been questioned and put to test. A very large body of literature exists on the Rorschach technique showing the impact it had on research workers and clinical psychologists who have found some of its rationale supported by facts and some others not.

Based on assumptions regarding the relationship between perception, creative—cognitive functions in general and personality, the Thematic Apperception Test was introduced by Henry Murray. It consists of a series of 20 pictures given in two sessions of 10 each. The pictures are presented in a standard sequence and the person is asked to tell a story on the basis of what he or she sees in the picture. The pictures are rather vague and increase in vagueness as the test progresses. The stories are recorded verbatim and are analysed in various ways. Murray's method of analysis centres around the concepts of need and press. He defined a number of needs, such as Affiliation, Nurturance, Dominance and also press. Needs are forces within the individual and press are forces acting on the individual from the outside. Along with the Rorschach, TAT has become an indispensable tool in the hands of the clinical psychologist. Like the Rorschach, TAT has stimulated a lot of research. Though these techniques are popular, their reliability and validity are still a matter of controversy. Research students find their theoretical base unclear and weak.

Besides the ones mentioned above, there are a number of other projective techniques like the sentence completion, draw-a-person, house-tree-person, finger painting etc. Practically all kinds of perceptual and creative activities have been utilised in projective techniques. Stimulated by the psychoanalytic theory of dreams, art, wit, slips of tongue etc., psychologists have developed some of these techniques to go below the superficial layer of personality. Unlike the Rorschach and TAT, however, these other projective techniques have not been tested very much by research workers with regard to theoretical assumptions, reliability and validity. Some of these, like free play, are used specially for studying children, whereas some others like TAT, are used for adults,

One other clinical method worth mentioning is the Interview, which is based on forming impressions of one person by another. Personality, in common usage, refers to the impression that is created by the person concerned on another person. Thus, we speak loosely of 'good' and 'bad' personality. All of us, in our daily life, are forming impressions about other persons and are likewise impressing others about ourselves. The only difference between such casual impressions and the impressions formed in the interview is that in the latter the interviewer, frequently, is a trained and experienced person and enters the interviewing situation with a preparedness which is not present in casual social meetings. Much work has been done on the reliability and validity of the interview method, which indicates that though it is possible to secure high reliability of interview, frequently it is found to be low, and its predictive validity is lower than most other ways of knowing about personality. In spite of such findings, however, interview continues to be used as one of the most popular methods of studying personality in clinics, hospitals, offices, army and educational institutions. This is because it has face validity and is relatively inexpensive and is a quick way of assessing personality.

There are some other clinical methods which use motor rather than the perceptual-cognitive activities in studying personality. The most well known among these is the Bender-Gestalt test in which one has to copy some patterns. Introduced by Lauretta Bender, the test has been developed further by Pascal and Suttell.⁶ The test is particularly useful for the diagnosis of certain kinds of personality disorders.

There are quite a few Performance Tests involving manual manipulation, perception and reasoning which are used in the assessment of personality disorders, particularly those involved in personality deficit.

Since the last war, Situational Tests of personality have come into vogue. These can be termed as clinical because, like the other clinical methods, they yield primarily qualitative data and are dependent on the observer. In situational tests, a person is observed in a group situation and the conditions, as far as possible, simulate natural setting. What a person does in the pre-arranged situation and how he does it, are the matters for observation. Interpretation is based on the record of observation. In some of these tests one-way screen is used, so that the observer is not present in the group situation.

Certain characteristics of the clinical methods may now be noted: (1) they are observer-dependent, (2) they are mainly qualitative, (3) the data collected by these methods can be analysed in various ways, depending on the theoretical orientation and interest of the worker, (4) their reliability and validity, as estimated by the

conventional statistical techniques, are not as high as is required for making discriminations between individuals, (5) they require specially trained psychologists for administration, scoring, analysis and interpretation.

(b) Psychometric methods seek to avoid some of the difficulties of clinical methods. Thus, in order to have data which are not dependent on an observer, Questionnaires and Tests have been developed which do not require the presence of an observer. The responses are self-recorded and are analysed according to a fixed set of rules, derived empirically in most cases. Instead of qualitative assessment, these methods aim at quantitative measurement, though measurement is not so advanced in the field of personality as in that of intelligence and abilities. Unlike the clinical methods, the tests and questionnaires are relatively easy to administer. For the evaluation of scores, however, they still require the trained psychologist.

One of the distinguishing features of the psychometric methods is the use of statistics in the construction and standardisation of tests. Most of the tests are empirically derived and have very poor theoretical underpinning. Thus, a score may have the properties of distinguishing between different kinds of personality, but cannot be derived from a theory of personality. Whereas most of the clinical methods give a global and complex picture of personality, the psychometric methods tell us only something about specific traits. There is a theory underlying trait-measurement, but it is not a theory of personality. It is more a mathematical-statistical theory of measurement based on very simple assumptions about human behaviour.

One such mathematical-statistical theory is that of factor analysis. If psychoanalysis influenced the development of clinical methods, the development of personality tests and questionnaires is grounded in factor analysis. With giant electronic high-speed computing machines now available, increasing use is being made of factor analysis in isolating personality traits measured by one or several tests.

Typically, a test or questionnaire has a large number of items. There are a limited number of ways one can give a response to each item. Certain responses given to a set of items are scored according to some rules. The score is, then, used as the measure of a trait underlying the responses to that set of items. Thus, one questionnaire or test may yield several scores for an individual, indicative of his or her standing on several personality traits. If factor analysis has been used to develop these trait-measures, one knows to what extent a score is a pure measure of the trait in question.

Among the large variety of questionnaires and tests of personality, the student may feel interested in looking up the following: the Bernreuter, the Maudsley inventory, the MMPI (Minnesota

Multiphasic Personality Inventory), 'Cattell's 16 PF Questionnaire, Guilford—Martin inventories and Edwards' Personal Preference Schedule. These represent the main types of instruments in this field and have been extensively analysed and studied by research workers in personality and measurement. Whereas the Bernreuter, Maudsley and MMPI are concerned mainly with personality disorders, the others seek to measure specific personality traits found in most persons.

(c) Though psychology's claim to scientific status started with the use of the method of experiment in the laboratory, and the method has been used in studying personality, not much has been achieved by way of development of laboratory techniques as of clinical and psychometric tools. The interest has focussed mainly on the effects of personality disorders on reaction time, sensory processes, learning and remembering, thinking and electrical and bio-chemical processes. The approach has been negative in the sense that disorders of the general psychological processes under conditions of stress, in personality deficit and in neurotic and psychotic breakdown have been studied. Perhaps the most extensive study with laboratory techniques in recent times has been done by Eysenck and his colleagues. Witkin and his associates demonstrated the effects of personality on perception in the strictly controlled conditions of the laboratory. The work of George Klein and his associates, as also the classical experiments of Murphy and his colleagues, have indicated that perception is influenced by personality. Though laboratory studies have not led to the development of new tools, they have contributed much more to the theory of personality and perception than any of the tools mentioned earlier. Due to the findings in the laboratory of motivational and other factors influencing perception, it has been possible for imaginative psychologists to devise clinical tests using the perceptual processes to understand personality. Apart from this influence of the laboratory methods, there has been development in two other ways. It has been possible to study the person under conditions of stress in the laboratory leading to greater understanding of factors leading to disorganization and breakdown. Another notable feature of laboratory experiments has been the study of personality through behaviour under reduced stimulus conditions, using particularly tachistoscopic presentation of threatening and non-threatening stimuli. These studies have thrown light on motivational influence in organising perception and thought. Considerable work is still being done in this field leading to development of new concepts, relationships and to understanding of the basic personality processes.

Development of Personality.

What we know about the development of personality has come from various sources. Longitudinal studies on small groups of children have been made by Child Psychologists. Psychologists working with

adult patients have found that the development of personality takes place according to a sequence of stages. Child analysts have mainly elaborated and corroborated the psychoanalytic theory of development based on adult patients. A good deal of our knowledge of personality has come from the study and treatment of mental disorders in hospitals and clinics. Inter-disciplinary teams, working among tribal people as well as in urban areas, have contributed much to our understanding of the interplay of forces between the individual and his social matrix and how the development of personality is influenced by such interplay. The study of child-rearing practices, gangs, and roles in a culture have shown how the development of personality is affected by culture. From such studies certain general features of development have been ascertained.

Development of personality involves the processes of differentiation and integration, like most other organic development. In the infant's life, there is a gradual differentiation of impulses, needs, activities etc. Out of a vague mass of activities and generalised tensions, appear specific conditioned responses and specific need-tensions. Generalised hunger, for example, gives place to specific appetites. Personality is a whole and, to start with, is a vague organisation. The process of differentiation refers to articulation within this vague organisation; it refers to emergence of parts within the whole, of regions within a field of forces, to use Lewin's terms. Once parts or sub-systems have been differentiated, there is necessarily the problem of relation among them. Thus, two specific habits may be such that both cannot occur simultaneously, for example, sucking and biting. A functional relation of succession may have to be established. There are other possible relations also. But what is of interest to us is the fact that once processes have been differentiated, there begins a process of integration, of binding together, of establishing functional relationships. If one takes cross-sections from the personality of an individual over a long period of time, within any cross-section one will notice parts, processes, regions, tensions, mechanisms which have been differentiated more or less in comparison with the same in another cross-section. But one will also see that differentiation has not led to building of impermeable dams and walls within personality; it has not led to disintegration of the organic whole, which would otherwise happen, if differentiation be the same as isolation. On the contrary, one will find that side by side with focussing, sharpening and formation of new processes and systems, there is a process of functional relationship, leading to a balanced articulation of the structure of personality. Whereas differentiation and integration can be visualised in a two-dimensional diagram, like the ones given in Lewin's books, the establishing of relationship also takes place along a third dimension, resulting in a hierarchical organisation of personality, in which system, at a higher level subsume the systems at a lower level. To understand this notion of hierarchy we need to go back to the example of cross-

sections of an individual over a long period of time. If we compare several cross-sections, we find that there is a relation among them, a consistency which runs through all of them. Thus, we find that though out of generalised habits or tensions, specific habits or tensions emerge and instead of remaining independent of each other, become functionally inter-dependent, we also find that in behaviour the individual shows a style which runs through so many different habits or tensions, or that there is a more general characteristic which runs through many of them. Thus, we find individuals who are expansive in expressing many different kinds of needs, or we find persons who show parsimony running through diverse activities and attitudes. Thus, different cross-sections from the same personality show a relationship between the cross-sections and not just within each cross-section. The hierarchy refers to this formation of more generalised structures which subsume less generalised structures.

Differentiation, integration and formation of a hierarchial organisation take place through maturation and learning. Studies made by Gesell and his associates seem to indicate that maturation plays a very important part in the development of personality, as if there is a more or less pre-determined sequence through which the child must pass in the course of its development. Psychoanalysts have noted that there is a more or less fixed sequence of stages of development for most people. Behaviourists like Watson, on the other hand, had claimed that apart from physical and physiological maturation, personality traits can be acquired through conditioning, and regularities in personality development are traceable to regularities in culture. The nature *versus* nurture controversy had plagued psychology for some time till it was realised that it was not possible to study maturation in isolation from all the effects of learning. In any given situation, the effects of both maturation and learning are inextricably mixed up. This is clearly seen in the personality of the young adolescent during puberty.

There are several determinants of personality. Quite early in the history of personality study certain genetic factors were noticed. Studies of families of deviant personalities were made and certain kinds of personality disorders were found to run through the family line. Such studies, however, do not prove the existence of only a genetic factor which is affecting the generations in the family, for the family environment remains uncontrolled. After all, if in a family of criminals, criminals are born, it is as much due to heredity as to the family environment of crime in which the child is brought up. Later, more careful studies, like those of Kallmann on the genesis of schizophrenia, were made which seem to suggest that genetic factors are involved in personality development. But the student should note that the genes do not operate in as simple a fashion as marbles, and human beings are much more complex than Mendelian peas. The genetic factor may lead to the development of certain Mongoloid

features in a child, or to some other organic or physical defects and can affect personality secondarily through such defects.

Constitutional factors were noted very early by Indian as well as Greek medical men. Thus, the bilious disposition due to over-secretion of bile was associated with certain personality traits. The phlegmatic person was also well known. Observation of infants has shown that infants tend to differ in temperament quite early. The effects of thyroid and pituitary glands on personality were studied by medical scientists. During the war, cases of brain lesions showed that certain brain conditions can lead to certain kinds of personality disorders. More recently, electroencephalography (EEG) has opened up new vistas of studying the relation between certain conditions of the brain and associated conditions of personality. The effects of chronic physical ailment, general debility, short stature etc., on personality are well known. The most remarkable phenomenon is the relation between sex and temperament. Though masculinity and femininity are not necessarily correlated with male and female sex, by and large men tend to be masculine and women feminine. Here, again, it is difficult to isolate the constitutional factors from the cultural. Similarly, some changes in the constitution with age are correlated with some changes in personality, though the influence of culture, again, has to be partialled out.

Cultural anthropologists and sociologists have studied the influence of the group and culture on personality development. Psychoanalysts have studied the role of the parents in building the foundations of personality. Bowlby's studies on mother-child relationship and mental health have shown empirically the importance of maternal care in developing positive resources of personality. Erikson has shown the complex interplay of family and culture in the development of personality. Studies by inter-disciplinary teams have shown how a study of personality development has to take into account the complex inter-play of all the determinants of personality.

Development of personality may be viewed from two aspects : (1) forces, impulses, motives etc. and (2) control mechanisms. The need-tensions gradually differentiate and specific motives emerge. With growth, new motives are added to the existing ones. There have been attempts to make a complete inventory of emotions and motives, but such attempts have not been very successful. Psychoanalysts have studied in detail the motives underlying love and hate. Only very recently achievement and affiliation have received the attention of psychologists. Rogers has thrown considerable light on self-esteem, or, what McDougall had called, the sentiment of self-regard. But apart from sex, the developmental history of other needs, motives or driving forces is little known.

The question whether motives are innate or acquired has been hotly debated in psychology. Attempts were made to draw up

complete inventory of human motives. McDougall's theory of instincts and his list of instincts remain a classical example of this trend in the history of psychology. Behaviouristic psychology challenged the notion of instincts and went to the opposite extreme of stating that all motives are acquired. Recently, the work of Lorenz, Tinbergen and others on animal behaviour has brought back the concept of instinct, though with some important difference. Psychoanalytic studies, on the other hand, have shown that, though biologically rooted, the sexual instinct is modified by experience. It may thus be appropriate to say that some motivating forces are primarily biological (e. g. hunger), some are primarily psychological (e. g. self-esteem) and some are psycho-biological (e. g. sex); and that these forces and their inter-relationships are modified by experience. Experiments in the learning of animals have shown that apart from a few primary drives which are aroused by certain organic conditions, most other drives, called secondary, are learned.

One of the key concepts in understanding personality is that of anxiety. Freud first outlined the theory of anxiety as a signal to the organism of an impending danger, which may arise out of immediate gratification of some impulse, or from some event in the world outside threatening the existence of the organism, or in going against the ethical code of society. The signal-function of anxiety fitted well into the modern learning theory of secondary drives and instrumental conditioning, and so, in recent times, anxiety has become a focus of experiments in learning. It has, thus, been known, in both clinical and experimental work, that anxiety below a certain level of intensity acts as a driving force and that the organism, in trying to reduce this tension, as it does in the case of other drives, learns to carry out or to avoid carrying out certain activities. The coping mechanisms that, thus, develop in an individual act as controllers of the driving forces in the personality. To give a simple example, hunger drives the child to seek food and eat it. He, at first, grabs the food he sees and puts it into his mouth, only to discover that this is not approved by his parents or other significant persons in his group. Later, he may not grab food at first sight, for he may get the anxiety of losing love, if he does grab immediately. So, in order to avoid anxiety which is unpleasant, he learns to hold in check his impulse to eat the food immediately at sight.

There is a process of generalisation in the course of learning which is seen in the use of certain coping mechanisms in a wide variety of situations. Thus, no matter what the impulse is the individual may try to avoid the situation, whereby he can avoid the anxiety incidental to the arousing of impulse. Avoidance has become generalised. Similarly, defense mechanisms like rationalisation, projection, withdrawal etc., are used to cope with specific anxiety and tend to be generalised. These generalised ways of reacting begin to be manifest as traits and types.

The development of impulses, drives or need-tensions (the motivating forces of personality have been variously described in psychology), of different kinds of anxiety, of the various coping mechanisms that are used in controlling the impulses by way of reduction or avoidance of anxiety, of generalisation of these ways of reacting—all these start from infancy and go on, possibly, throughout one's life. But the tempo of development is usually slowed down with advance in years and the area of development is also narrowed down. There are exceptional cases, however, of persons, who have changed considerably or rapidly in the middle ages or even in old age.

The development of personality, though continuous, proceeds through certain crisis situations. These crises are brought about sometimes by maturational processes like teething or pubertal changes sometimes by internal bodily processes like gestation or increased activity of adrenal glands, sometimes by deep personal experiences like love or anguish, sometimes by certain social situations like marriage or death, sometimes by certain cultural pressures like retirement. Most often a crisis involves more than any one factor. Situations become critical when high anxiety is aroused. In coping with high anxiety all the resources of personality have to be mobilized. The resolution of such crisis leads to over-learning of the coping mechanisms. The crises, thus, leave lasting impressions on a personality, and development proceeds through a series of resolution of crises arising from various sources. Psychoanalytic studies, supplemented by the studies made by anthropologists, have thrown considerable light on the crises, modes of their resolution and their effects on the development of personality. Thus, a person develops certain likes and dislikes, ideas and ideals. He or she not only develops certain habits of doing certain things in certain ways, but also certain ways of looking at certain things, thinking of them and evaluating them. Lastly, he or she develops a self-concept consisting of many self-images associated with certain roles, situations and values and, thus, much of adult behaviour can be understood as (1) creative, that is trying to expand the boundary of self or modifying the existing images and (2) defensive, that is trying to preserve the existing notions about self and resisting any change in the boundary. Phenomenological self-theory, as it is found in the writings of Carl Rogers, is concerned with understanding personality from the point of view self-concept which is the last general structure to develop in the hierarchical organisation of personality.

Disorders of personality

In a sense we know more about the sick rather than the healthy person. The most articulated theory of personality is that of psychoanalysis, and psychoanalytic theory has been based on the data obtained in the treatment of mental disorders. Psychoanalytically, the difference between the mentally healthy and the unhealthy person is mainly quantitative, and, therefore, a generalisation of theory

based on neurotics and psychotics is possible. The statistical theory of normality-abnormality also supports this contention that the normal and abnormal belong to the same continuum. The normal being the average of a population, abnormality is defined in terms of the distance away from the average. It is only very recently that Eysenck's work seems to suggest that, after all, it may not be a continuum.

Disorders of personality can be broadly classified as follows :

- (1) psychoneurotic disorders
- (2) psychotic disorders
- (3) organic disorders
- (4) behaviour disorders

Mild disorders, like slips of tongue, forgetting, are not included in the classification given above.

The psychoneurotic disorders are of various types, but primarily they are (a) hysteric (b) obsessive-compulsive and (c) anxiety state and phobia. The hysteric type of disorder, in its classical form, appear as fits. It is also manifested through certain symptoms like functional paralysis of the body, hyperesthesia etc. The obsessive-compulsive disorders appear as the running of certain ideas through the head in spite of one's desire not to have these, counting the number of steps or lamp-posts, washing hands again and again etc. The phobias are abnormal fears about animals, high places, solitude etc. In anxiety state the person is in jitters, highly tense, fearful and blocked. There may be tremor of hands and palpitation, as if the person is in a very anxious situation, where apparently there is none.

The psychotic disorders can be roughly classified under (a) manic-depressive psychosis and (b) schizophrenia. Whether these are fully homogeneous classes in themselves, there is some doubt. The manic-depressive disorder is manifested as violent swings of mood from elation to depression in a cycle. In the manic phase there is intense and continuous activity, even violence, followed by almost total inactivity in depression. Whereas the manic patient may not be able to sit still and may go on talking at a very rapid rate, both sense and nonsense, the depressed patient sits still at a place, morose, not communicating with the world. In the schizophrenics one finds a large variety, but the prevailing are the following types :

- (i) The person may show inappropriate affect, talk confusedly, and may have suspicions, queer ideas, hallucinations and so on.
- (ii) The catatonic patient is unable to change posture assumed by him or her. Thus, he or she may remain standing

like a policeman or like a god for hours together. He or she does not communicate with the world except through a queer bodily language of his or her own. The patient may have to be washed, dressed and fed like a baby.

- (iii) The hebephrenic patient is garrulous, talks incessantly, using queer words, neologisms etc. Incoherent speech is accompanied by shouting, gestures, postures, and even violence. There may be incontinence and incorporation of inedible substances.
- (iv) The paranoid patient is marked by delusions of grandeur or ideas of persecution. He or she lives in a delusional world.

The organic disorders largely are disorders of the brain due to lesion or tumour, and disorder of the nervous system brought about by syphilitic infection, alcohol or drug. Mental deficiency is also another condition leading to impoverishment and lack of growth of personality. Epilepsy is another organic disorder in which fits tend to recur and the personality is gradually impoverished.

Behaviour disorders include various kinds of disorders like delinquency, pathological lying, stealing, misbehaviour, raising problems of management for the family, the school or the community.

Much has been known concerning the etiology, course and treatment of these disorders. The milder ones do not need hospitalisation, but the psychotic disorders generally require hospital care. There is no one reason for breakdown in mental health, but in a general way it can be said that when anxiety is severe and the coping mechanisms are inadequate, the organisation of personality is disrupted and disorders begin to appear. Two factors are crucial in this: one is the tolerance level of the personality and the other is intensity of anxiety. Disorders may also appear when several episodes involving anxiety recur in the life of an individual. Cases of disorder should be referred early to the family physician for treatment, and through him to psychiatrists, psychoanalysts and psychologists concerned with such treatment. Treatment may be medical, psychoanalytic therapy or psychotherapy of other varieties.

Personality and Education

Healthy development of the individual and his personality may be regarded as one of the aims of education. Education, if it is to achieve this aim, has to be well-rounded and not just concerned with subject-matter. Education has to be so arranged that it helps the processes of personality development that we have discussed above.

Personality enters into, at least, three aspects of education, namely, administration, instruction and achievement. Administra-

tion involves relationships among persons and the relationships are not only within one level but between different levels in the hierarchy of a school organisation. Dominance of one over another and rivalry to win the praise of the boss or of students frequently bring about stressful situations in the administration. How individuals handle such stress depends partly on their personalities. The way they cope with the anxiety has already been referred to. But this affects the teacher's behaviour in relation to other teachers and, what is more important, it affects his teaching and his behaviour towards students. The teacher may lose temper or may not respond with his usual warm feelings to his students, thereby disrupting the educational climate of the class-room conducive to effective learning.

Instruction involves the social situation of a class-room in which the teacher occupies the leader's position. A role is thus expected from the teacher which requires certain personality traits. During the course of teaching certain kinds of events take place involving give and take between the teacher and the student. Sometimes it involves emotions and impulses in young students which the teacher may not be able to handle. This is likely to provoke anxiety in the teacher who will then use the coping mechanisms which have been developed.

It is well known that achievement is influenced by personality factors in students. The fear before examination is crippling; the subject of examination may be uninteresting due to dislike of teacher, and hence failure of recall;—such events happen frequently with students. Though they have the ability, they are unable to achieve according to ability due to lack of application. In order to be able to do as well as one's abilities will allow, it is necessary that the individual has all the energies at his or her disposal. Whether this is so or not depends on the nature and amount of conflicts in the personality of the individual. Achievement may have certain symbolic meanings for the individual which arouse anxiety and inhibition following it, so that the individual avoids achievement itself.

The teacher is a parent-surrogate, that is, the attitudes of pupils towards their parents are easily transferred to the teacher. Thus, the teacher becomes a screen on which is projected the love and hate of pupils for their parents. But the situation gets more complicated by the fact that the teacher as a person is different from the parents and cannot, therefore, be just a screen. It is as if the screen itself has certain forms, colour and contour on which is super-imposed the projected image. Thus, reality and phantasy get mixed up in the image of the teacher in the students' mind. What the students do in relation to the teacher is, therefore, in reaction to the teacher in reality as much as to the teacher in phantasy.

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What is Psycho-analysis ?

Psycho-analysis is a term often misunderstood and loosely used. It is, for example, associated with the names of Freud, Adler and Jung, although in the correct sense, it should be associated only with the name of Freud and those who use his methods. Freud himself insisted that the name 'psycho-analysis' should be restricted to the theory and practice developed and named by him.

'Psycho-analysis' now represents a school of psychology which, curiously enough, had its origin in the medical practice of Freud rather than in any previous school of Psychology. It revolts against all other schools, specially those representing the academic psychology which lay emphasis on learning, perception and thinking—structuralism, associationism and the Gestalt school. It regards all these schools and even purposivism as abstract and intellectualistic dealing with surface mental phenomena. It claims for itself the unique position of "delving deep, beneath and beyond into the real roots and springs of human action" (12) and of "unravelling for us the natural history of mental growth and thus placing within our ken, the means for its conscious direction and control..... (45). Its founder Freud therefore, can be easily ranked with those scientists who have tried to correct our conception of ourselves, the scientists like Galileo and Darwin. Galileo tells us that we are not the centre of the universe. Darwin makes us more humble by discovering that we were just higher animals. Freud has made us still more humble by laying the major emphasis on our animal nature and by his assertion that deep down in our minds is a desire to return to the inorganic state. Thus he has pricked the bubble of human vanity and has shown and made us feel that the so-called divinity of man, spoken of throughout the ages, is a mere illusion.

Its two meanings :

The term 'psycho-analysis' has two accepted meanings.

Firstly, it means a method of treatment designed by Freud for the cure of a certain class of nervous disorders through a technique for investigating deep layers of the mind.

Secondly, it represents a system or school of psychology which has grown and has crystallised itself into a series of important and systematised theories as a result of using 'psycho-analytical therapy'.

We shall use the term 'psycho-analysis' in the second sense alone. To look upon it as a method of treatment or a mode of therapy is not within the scope of this chapter, nor will it be possible to describe it here as a technique for investigating the deeper layers of the human mind (the unconscious). In other words, we shall deal with the main tenets or doctrines of psycho-analysis.

II. Fundamental Principles of Psycho-analysis :

(i) The Unconscious, the Pre-conscious and the Conscious.

Freud refers to the unconscious, the preconscious and the conscious as the topographical aspects of the mind or self or 'psyche'. He assumes the existence of mental processes of which we are totally unaware but which have an enormous influence on our thoughts, feelings and actions. Freud, however, was not the first to have thought like this. Some speculative philosophers like Leibnitz, Hartmann, Schopenhaur and Nietzsche had used the idea of 'unconscious mental phenomena' in their writings. The conscious represents what we are immediately aware of. It comprises all the thoughts and feelings we are aware of at a given moment. The pre-conscious, or fore-conscious, comprises 'thoughts that can become conscious in appropriate circumstances (28).' The preconscious is a sort of ante-chamber to consciousness. It is that portion of the mind that is readily recallable either through an effort of will or through association. The unconscious comprises material which we cannot recall at all. It consists of thoughts and feelings that we can become conscious of only through a special technique.

For Freud, the unconscious is the true psychic reality. The conscious is only a fraction when compared with the vast unconscious. In it are stored and found millions of infantile wishes, unsatisfied desires, cravings and urges. Some, rather, most of these cravings and wishes are legacies from childhood. Sometimes, they lie dormant ; at other times, they are active. The experiences that the unconscious contains are highly charged with mental energy, they are libidinal in nature—experiences of a traumatic and passionate type, occurring in early childhood.

Freud postulates the existence of the unconscious because of the following facts :

- (a) there are many experiences that we cannot recall and are lost to consciousness,
- (b) the phenomenon of somnambulism,
- (c) the phenomenon of post-hypnotic suggestion,
- (d) solution of problems during sleep,
- (e) dreams,
- (f) morbid forgetfulness,
- (g) slips of pen and tongue,

- (h) the success of the psycho-analytical therapy justifies the concept of the unconscious. The basis of this therapy is the unconscious motivation of human behaviour.

(ii) *The Id, the Ego, the Super-Ego.*

The conscious the preconscious and the unconscious constitute the topographical aspects of mind—the three levels of the human psyche. A complete picture of the structure of mind or personality can be had only if we include its dynamic aspects. This is how Freud thought. The dynamic aspects are three in number and their action or interaction takes place at the conscious, preconscious and the unconscious levels.

- (a) The Id : It is the fount of mental energy, the primitive undifferentiated basis of the whole mind. "It is the main reservoir of both the life and death instincts." (7) It is completely unconscious and is dominated by 'hedonism' or the pleasure principle. It has no idea of time or reality. It has no foresight of consequences. Its strivings originally are impulsive and uncontrolled but they are controlled by society and the reality principle in the course of development. If the striving originating in the Id were not controlled by reality and society, we should become neither adult-like nor civilized but live in a timeless world or immediate sensory satisfaction or discomfort.
- (b) The Ego: The Ego represents the self or the conscious intelligence—the integrating part of the personality. It is in constant contact with time, with space and with physical reality. "It is critical of the Id and resistive of its impulses." (8) Its function is to establish relationship between the individual organism and the outer world, including the human environment. "The Ego is selfish and directs behaviour towards the maximal satisfaction of the individual's urges consistent with its knowledge of social and physical reality." (7) The contact with reality compels the Ego to adopt the reality principle and to abandon the pleasure principle which dominates the Id. "It stands for reason and circumspection, prudence and discretion." (35) It thus endeavours to guide and direct the libidinal impulses of the Id. The Ego is an adjuster between the wishes of the Id on the one hand and the demands of external reality on the other. At the same time it has to obey the demands or dictates of the Super-Ego. Thus the Ego has to face the three sets of forces :
- (i) external reality,
 - (ii) instinctive pressure from the Id,
 - (iii) inhibition of control from the Super-ego.

- (c) The Super-ego : The Super-ego is the chief force that makes for the socialization of the individual. "The Id is primarily biologically conditioned, the Ego primarily conditioned by the physical environment, but the Super-ego is primarily sociologically and culturally conditioned." (6) It corresponds to the idea of conscience. In it originate the feelings of remorse and guilt. It is also called the Ego-ideal as it contains the social ideal which society sets up for our behaviour. It watches over the relations between the Id and the Ego, "acts, as it were, like a guard that warns the Ego of the danger of accepting any repressed impulses emanating from the Id." (28) Within it reside the forces of repression and censorship, self-observation and self-criticism.

How does the Super-ego come into existence ? Its existence is brought about by the need for mastering and repressing the Oedipus complex. Parents do not allow the child to realise the Oedipus desires ; and the infantile Ego gets strength to overcome these desires by setting up within itself the same prohibitions and obstructions by means of identification with parents. "Their point of view, as it were, is adopted by the Ego, but the modification of the Ego, thus arising, remains isolated and confronts the rest of the content of the Ego as the Ego-Ideal or Super-Ego." (25) The Super-Ego, so formed, is strengthened by further identifications with parent substitutes and their precepts. When there is any discrepancy between the Ego's performance and the claims of the Super-Ego, there arises a sense of anxiety and guilt.

"The existence of the Super-ego explains how in every form of civilisation there is self-regulating or self-restrictive force in individuals which is indispensable for social order. If the internal code of law such as the Super-ego, or, to use the popular expression, the conscience, were not present, social order could only be secured by assigning to every citizen—a policeman to make him conform with accepted social behaviour." (32) Mitchell has clearly summed up the functions and formations of the three dynamic aspects of personality as follows :

"The mind in its beginning is conceived as an unconscious Id. The Ego arises as a modification of the Id, produced by contact with the outside world through the perceptual system. It comes into existence in response to the claims of reality, and for the purpose of securing a real satisfaction of the impulses of the Id which disregards reality and is dominated by the pleasure principle. By means of identification with the parents or one of the parents, an Ego-ideal is set up within the Ego, and as a Super Ego, adopts the critical and condemnatory attitude of the parents towards the libidinal impulses of the Id. The Ego-ideal functions as conscience and is the instigator of the repressions effected by the Ego". (35)

Having understood the functions of the Ego, the Id and the Super-Ego, we can easily see that dynamically there is a constant struggle or conflict between the forces of the Id, which are directed towards libidinal and aggressive satisfactions, the Super-Ego which represents the conscience, "culture" and "civilization" and the Ego, our conscious intelligence or self. The latter has to adjust the forces of the Id to those of the Super-Ego all the time, and specially so if the Super-Ego is over-moral and severe. The process of adjustment involves conflict. This brings us to the discussion of an important postulate of Psycho-analysis.

(iii) *Conflict, Repression and Complexes* :

As said before, Freud believed that all behaviour is the resultant of the dynamic conflicts between the forces of the Id, the Super-Ego and the Ego. These conflicts take place in the conscious, the pre-conscious or the unconscious levels of the mind. Why is there this conflict? The Id impulses which are largely sexual and aggressive in nature want to be satisfied, but these come into conflict with the demands of external reality and the Super-Ego. In other words there is a clash between the primitive impulses and social and moral taboos—prohibitions and ideals. There are religious and educational considerations which try to keep the so-called 'asocial trends' repressed by the Id impulses in check. The conflict is a painful affair and it should end as soon as possible. It can be ended by following the Id impulses and ignoring the claims of the Ego and the Super-Ego, or by consciously denying the impulses or urges or by throwing these impulses into allied channels sanctioned by society and thus giving them a vicarious satisfaction. The first course is difficult because of opposition, of reality on the one hand and society on the other; the second course means defeat of the Id desires. The third course, too, is fraught with many difficulties. We need suitable education, guidance and environment for that. Normally, the conflict is resolved, by an actual forcing down of these wishes into the unconscious layers of the mind. The conscious personality re-presented by the Ego is thus freed from the strain of the conflict. The anti-social desires of early childhood are forgotten. The whole process is unconscious. This unconscious forgetfulness of the Id impulses or throwing down of these impulses into the unconscious is called Repression.

According to Freud, repression is the central concept, a centre with which can be tied all the elements of psychoanalytic theory. The function of repression is two fold. (a) "To exclude from consciousness material that never was conscious", and (b) "To expel from the consciousness or from the preconscious material which is disapproved (32)." The material thus repressed may be driven either into the Id or into the unconscious. Repression can be exerted against the Super-Ego and against reality provided it has an inhibiting effect on our behaviour and is unpleasant. Ordinarily it is the

ideas connected with the Id impulses that are repressed and the psycho-biological energy behind these ideas is provided an outlet and utilised in symptom formation.

An interesting fact to note is that Freud never preached license so that no repression should take place, as some people think. Every individual must repress many ideas connected with the libidinal impulses and those of aggression in order to become social and civilised. In some cases repression is successful because the repressed energy remains in the unconscious and has no bad effect on the individual. In many a case, however, repression is not successful. When it is so, it leads to further troubles. The repressed wishes are not extinguished and continue to be active in the unconscious. These repressed experiences slowly gather strength by making alliance with other allied repressed experiences, thus forming an active group whose business is to take possession of the conscious (or to regain consciousness) whenever possible. This rebellious group of repressed desires working with a common end is known as a *complex*. The conflict which leads to the formation of a complex is in the conscious mind, to start with. As soon as a complex is formed the conflict goes into the unconscious.

These complexes are just like exiles whose presence in the conscious is not tolerated. But they do strive to come back to the conscious level. The forces of the Ego and Super-Ego would not permit this. The mental force that keeps the undesirable wishes confined to the unconscious region of the mind and prevents their effort at fulfilment is technically known as the censor. "The censor is not an outside agency implanted in us but is a part of our own personality." (5) It represents the moral and social aspects of the Ego and Super-Ego. Thus 'censorship' and 'repression' are connected because the agency that affects them is the same.

Freud has described the position of the censor in a picturesque manner. The unconscious is represented as a large ante-room full of all sorts of complexes, repressed experiences. The conscious mind is like a smaller reception room which is presided by the "deity of consciousness." The complexes seek admission to the reception-room. The censor is the gate-keeper and examines the applications for admission to the reception-room and checks them. Again, he compares censor to Cereberus, the hydra-headed dog of Pluto, which is stationed at the entrance of hell and whose function is to prevent the living from coming to it and the dead from escaping.

We have just mentioned these complexes are not allowed to enter the conscious mind. But the censor is not uniformly vigilant at all times; its activities are considerably weakened during sleep as also during moments of excitement. It is during such moments that the repressed experiences seek to regain the conscious mind. At times

they may come up in various disguises like dreams. "When they are more serious, however, they become the afflictions of the hysteric, the delusions of the psychotic, the fears and obsessions of the psycho-neurotic, and even the productions of the genius." (7) Sometimes the conflict is resolved in an economical fashion in various manners through the so-called mechanisms. "These mechanisms are various unconscious or conscious processes whereby the inner conflict situation is eliminated or reduced in its severity." (6) They defend the organism inasmuch as they keep it intact. They thus bring about the restitution of normal equilibrium and personality growth. It is for this reason that they are called "defence mechanisms." These mechanisms can be observed even at the preconscious level and this proves that the transition from fully conscious conflict to deeply unconscious conflict is a continuous one. There are major mechanisms as well as minor mechanisms. Repression, conversion, regression, sublimation, reaction-formation and rationalisation are included in the former category, whereas transference, identification, introjection, projection and displacement are included in the latter.

(iv) *The Theory of Instincts and Libido :*

While describing the process of repression and how it leads to the formation of complexes we said that repression takes place as a result of conflict between the Id impulses or basic urges and the social and moral standards. Or the conflict is between the pleasure-principle and the reality principle.

According to Freud, there are two decidedly innate psychobiological urges or instincts. These are not specific in the sense of McDougall. These urges may be called Eros or the life or love instinct and Thanatos or the death instinct or the aggressive urge. They work through the existing structure of a person's being (personality) in his environment and determine what he is and what he does. These instincts are modified by the life experience of the individual, particularly those of the earliest years of life.

The forces which impel us to build, construct, and preserve ourselves and the species, are all manifestations of the life or love instinct, whose aim "is to bind together—to establish and maintain ever greater unities. The instinct of self-preservation and the preservation of the species, although in a sense they clash, fall within the bound of Eros. So do object-love and Ego-love." (26) On the other hand, the forces which impel us to knock down, to destroy, to be aggressive to others and to turn aggressively on ourselves, belong to the death instinct. Each instinct can be considered from the psychological and physiological points of view. For example, physiologically the life instinct is the fundamental tendency to maintain the individual organism and to cause it grow. Psychologically it leads to the sexual impulses and other preservative tendencies or activities such as food taking, building of shelters, making clothes,

and intellectual pursuits. Psychologically, the death instinct gives rise to hostile and aggressive behaviour including sadism, to self and race destruction (homicidal and suicidal tendencies). It manifests itself in satire, criticism or polemics.

But the two instincts are not opposed and mutually independent forces. They fuse and intermix. The intermixture of the two instincts leads to the Freudian principle of ambivalence. Not even the most passionate love of a man for woman is free from certain amount of hate or aggressiveness.

Connected with the theory of instincts is the theory of the libido. Libido is the energy that works throughout the whole psychic system. Freud did not give a general colouring to the word energy. He used it in a narrow sense—the energy of the life instinct which finds its outlet in bringing people into close physical contact. It is the source of sexual love, self-love, parental affection, friendship, and of love for humanity in general. It causes the infantile sex-life; when the libido flows outward, it causes object love; when it flows inward, it causes self-love or narcissism. Its flow may be arrested and then it brings about fixations. Sometimes it goes backward and the state of regression is produced. It is possible to “desexualise” it and thus deflected it makes for sublimation.

The direction of the libido gives rise to three stages. When the child is a lover and loved one together, we have the autoerotic stage. In due course of time the process of differentiation enables the child to direct his libidinal demands towards his person. This is the narcissistic stage. Gradually, the libido is directed to some object outside oneself, some external object usually the mother. This is the allo-erotic phase. It is in this phase that there develops the Oedipus situation.

It is true that the term libido is used to denote the craving for satisfaction of the sexual urge and is the driving force behind sexual activities of every kind, but it is not the same thing as the sex urge. Mitchell makes this point clear when he writes: The Libido is prior to sex—it is a form of the primal life energy which is only later monopolised by the sex instincts. It continues to manifest itself in the individual life after the sexual functions have apparently ceased and is the motive force of various interests and pursuits.” (35)

(v) *The Theory of Psycho-sexual Genesis-Infantile Sexuality :*

According to Freud, the libido is the energy behind the sex urge. It is this urge that is repressed and which causes neuroses. Again it is this that determines the development of personality. Freud never advocated free sex-expression as some people believe, nor did he say that repression of sex instinct is always harmful. He only emphasized the importance and place of sex in human life and gave us

a different view of this important urge. The main findings of psychoanalysis (on sex) in the words of Hollitscher, are three :

- (a) "Sexual life does not start at puberty. Its first manifestations may be clearly seen after birth."
- (b) It is a mistake to restrict the ideal of sexuality to activities connected with genitals. Sexuality is a wider concept and embraces many activities which have no connection with genitals.
- (c) The fundamental function of sexuality is to obtain pleasure from zones of the body. This function is later brought into the service of reproduction but the two functions often fail to coincide completely (26).

Freud considers any behaviour sexual which leads to an intimate psychological contact. This is accompanied by a tendency towards physical or bodily contact as well. According to Freud the psychosexual development falls into three major periods.

- (i) the infancy and childhood period,
- (ii) the latency period,
- (iii) the pubertal period.

1. The study of the 'infancy and childhood period' which lasts from birth to 5 years enables us to study the Freudian conception of infantile sexuality—a subject that has provoked controversy and stimulated "aggression" against Freud who has been dubbed as a 'pan sexualist'. Freud's observations of the neurotics showed that the frustrations occurred as early as the first year and continued through childhood. These frustrations were mainly related to the libidinal components of the life instinct. He thus believed that no theory of personality genesis would be complete without taking into consideration the fact of 'infantile sexuality'. Although the child manifests sexuality, yet 'the sex drive has not the intensity that it will have in adolescence when the sex glands and hormones have matured, and it does not yet have the definite aim of the sexually excited adult' (45). The purpose of this drive is bodily pleasure which the child can derive from various parts known as "erogenous zones". When stimulated, these parts of the body (mouth, arms, eyes, genitals etc.) furnish sexual pleasure or gratification. This stage or period is autoerotic. The libido has not been yet directed to any other person as a love object. The child in this period knows no shame or disgust ; consequently he can look, touch, listen, taste, smell everything. He would love to see everything ; likes to show himself naked ; he has no feeling or sense of sympathy, morality or disgust. He is like an animal. This behaviour has made the child's sexual life "polymorphous perverse" or perverse in all directions, not abnormal or immoral.

This autoerotic stage passes through three phases, (a) *oral*, (b) *anal sadistic* and (c) *phallic*. The child, in the beginning gains libidinal satisfaction from the mouth through sucking. The sucking of hungry baby may be driven and caused by hunger but the sucking activity of a child who is not hungry is motivated by pleasure which is sexual or libidinal. This is the oral stage. At three or four years, the child becomes interested libidinally in excreta. "He gets pleasure from his bowel movements and may delay evacuation so as to obtain stronger sensations" (45). This is the anal stage. In this stage the child shows aggressive tendencies also in such behaviour as breast biting, refusal to take food, irritability. For this reason, Freudians call this anal-sadistic stage or phase. Still later, at the end of the 4th or 5th year, the child evinces interest in her or his genitalia. He obtains pleasure from manipulating the genital organ. This is the period of infantile masturbation which according to psycho-analysis is "a universal and normal phenomenon to human growth and development" (37).

It is somewhere in the phallic phase that the development of the Oedipus complex takes place. This happens when the libido is directed towards an external love-object. Usually, the boy's libido fastens on the mother, the girl's on the father. This attachment is usually helped along by the preference of the mother for her son, and of the father for his daughter. The boy, in claiming sexual love from his mother, stimulates his father's rivalry, and the girl becomes a rival of the mother for the father's love. The complex derives its name from the Greek myth concerning Oedipus, the son of Laius, King of Thebes—the boy who killed his father and married his mother. Freud developed this idea on the basis of his studies and observations of family life and interviews with his patients.

(b) The latency period : The infancy and childhood period is followed by the latency period (5 to 12 years). This is essentially the period of psychic consolidation and synthesis. The psyche has a respite from infantile urges" (22). Erotism and narcissism decrease. Attachments to persons are there but with little libidinal colouring in them. It is in this period that the Ego is fully differentiated and the Super-Ego develops as a result of the repression of the Oedipus situation and the consequent identification of the Ego with the parents or their substitutes.

(c) The pubertal period (the genital) extends from 12 years onwards. There is a revival of sexuality and it passes through autoerotic and homo-sexual phases before it is allowed its normal outlet in hetero-sexual behaviour. It is possible that even now "sex" may be frustrated and repressed but the repression can never be so strong as in childhood. A boy or a girl may show fixations at the 'oral' or 'anal' stage of development. They may develop perverted forms of sex manifestation such as 'undue exhibitionism'.

Before we discuss the use of Psycho-analysis in education let us reiterate the fundamental tenets of psycho-analysis as a theory. Freudians or psycho-analysts believe in the principle of thorough-going determinism. For every type of behaviour there is a cause or motive. This cause or motive may belong to the unconscious, the conscious or the pre-conscious. But the unconscious psychic motivation is of greater importance in understanding human behaviour. The personality development is the result of the conflict between the Id, the Ego or the Super-Ego. This conflict may take place at the conscious, preconscious or unconscious levels of the human mind. The conflict at the unconscious level is more serious than that at other levels. The conflict in the conscious is generally resolved through repression in the unconscious which leads to the formation of complexes. These complexes cause tension and to relieve this, adjustment mechanisms come into being. Sometimes complexes may lead to psychoneuroses and psychoses and other disorders of personality. The conflict between the Id forces, the Ego and Super-Ego is a conflict between the basic innate urges or instincts and acquired social and moral standards. Of these basic urges, the Life instinct is very important. The libidinal component of this instinct is sexual in content. In other words, it is the frustration of the sex impulse that largely causes conflicts and repressions. The sex-urge does not start at puberty. It manifests itself immediately after birth. The fundamental function of this urge is to obtain pleasure from different zones of the body.

III. *The use of Psycho-Analysis in Education.*

We may now consider to what extent psycho-analysis helps the educator. In what ways can the knowledge of the theory of psycho-analysis be applied to education? In what movements and practices has psycho-analysis provided a stimulus to new education? Should a teacher be a psycho-analyst and analyse children showing problem behaviour? It is these questions that we shall attempt to answer in the following pages.

(1) Psycho-analysis has changed the conception of Education and widened its aim. Freud, in his "Collected Papers" writes, "Hitherto education has only set itself the task of controlling, or, it would be more proper to say, of suppressing the instincts. The results have been by no means gratifying.....Nor has any one inquired by what means and at what cost the suppression of the inconvenient instincts has been achieved. Supposing now that we substitute another task for this one and aim instead at making the individual capable of becoming a civilised and useful member of society with, the least possible sacrifice of his own activity." Thus education is no longer considered as restraint to be achieved by external regulatory means such as punishment and rewards. The aim of education is no longer the

formal training of the intellect. Psycho-analysts have widened this aim by including in it the development of the whole personality. This implies the development of emotions as well which presupposes the influence of unconscious factors. The development of the whole personality is for socially desirable purposes. Each individual is to be helped to make the best of his life so that he may live as a useful member of the society.

(2) Psychoanalysis has laid stress on certain psychological incentives or means in education which have been recognised by all progressive educationists all the world over. These means are particularly necessary for early education. They are: (a) Affection or love or "the policy of preserving the child's emotional tie to his parents or substitutes" (41). This is recognised by such great educators as Pestalozzi and Froebel. (b) Use of instincts, their utilisation in various activities. (c) Permissiveness and leniency. (d) The child's own will or interest which is the educator's most powerful ally. Unless the child's will is activated, education can never succeed. The most determined and conscientious education cannot educate a child who remains passive. (e) Positive incentives instead of negative ones, rewards rather than punishments". Positive incentives will be associated with the child's own insight, critical abilities etc. The child's insight is as much a means of education as his mother's rewarding smile. At each age level a humanised education makes the fullest use of the child's critical abilities (41).

(3) Psycho-analysis has thrown light on and explained the variations that we find in the assimilation of various subjects among different children. Our experience tells us that the degree of assimilation not only differs from person to person but even from subject to subject. We ascribe these variations to differences in intellectual capacities or deficiencies. Psycho-analysis tells us that the fact of variation "is far more a question of affective inhibition versus sublimation, thus depending on the child's reaction to the unconscious associations of the subject-matter (28). What happens is that every part of the conscious topic becomes associated with unconscious ideas. It can even symbolise these. Researches have shown how in certain cases "errors in computation may be traced to such factors as a queer half-conscious preference for certain figures and dislike of others because the latter symbolise unpleasant things. Schonell's researches in the diagnosis of specific backwardness bear out this fact. Blanchard's work in the problems of reading disabilities shows that in many a case the emotional conflicts and difficulties in personality development cause this disability. These emotional conflicts arise out of the disturbance in parent-child relationship. The result is that the child has to use so much of his energy for maintaining repression that very little is left for such a complex mental process as learning to read.

(4) Psycho-analysis has explained why the act of teaching and of imparting information is sometimes resisted by the child, in spite of his natural thirst for knowledge. This resistance, in extreme cases takes the shape of disobedience and refusal to co-operate with the teacher. There may be environmental conditions that are unfavourable to learning. The teacher's personality may not be as genial as it should be. But above all, the child resists because the information imparted and the act of teaching are consciously or unconsciously taken as constituting a criticism. The act of teaching is performed in such a way that it implies the child's previous ignorance and an effort 'to remedy' or 'to improve'. This wounds the child's self-love and stimulates his aggression; hence the opposition. The child remains a bad learner in spite of his abilities. This situation improves if the act of teaching becomes a co-operative activity. Another important principle of learning and teaching that is suggested by this situation is that since children are deeply sensitive to anything resembling moral criticism, "the more moral a flavour is imparted into the teaching, the greater is the inhibiting effect on the child's future intelligence (28).

Associated with this is the phenomenon of the reluctance to go to school, shown by a few children. The psychoanalysts tell us that it is due to anxiety and aggression. The anxiety about school can be in the form of fears; fear of the teacher; fear of pupils and fear of school-work with an expectation of failure. Besides these fears, children may have a fear of separation from the mother, which going to school involves. "The child may fear that his mother may go away for ever because of his badness. This occurs most often where the mother has threatened to leave home because of the child's behaviour or where there has been a conflict between the parents" (41). These situations impress on us the necessity for maintaining a harmonious parent-child or mother-child relationship. This fear or dread according to Freud, is generally found in the behaviour of children with guilt complexes, castration anxieties and repressed Oedipus complex. This dread of the parent is projected on to the teacher and the school.

(5) Psycho-analysis brings out the importance of proper environment for the education of children. The environment in the school and in the home should be such as to reduce the chances of repression and increase the chances of sublimation. It must, however, be noted that we cannot avoid repression altogether in life. Some degree of repression seems to be essential to a balanced conscious life and to adaptation to reality. This fact is recognised by Freud; but it is also necessary to realise that the environment which deprives the child of all satisfactions and indirect outlets for his unconscious wishes and phantasies should be regarded with apprehension. The environment should provide opportunities for spontaneous and creative activities and for all sublimations—directions of the basic urges

from their biological goals into useful, socially desirable channels, through artistic activities. Again, it implies that the teacher's guidance must be positive rather than negative. It must show to the child what he can do or achieve.

(6) Psycho-analysis has brought out the significance of play in the education of children. Play externalises the internal. It is an activity which brings to the child psychic equilibrium in the early years by enabling him to express his attitudes, wishes and impulses, fears and phantasies. Psycho-analysis impresses on the educator the importance of the study of the normal interests and activities of the child at different ages and supply those stimuli or materials for play that will be conducive to growth; materials which stimulate free, unhindered unorganised imaginative play as well as specialised apparatus for organised games. Psycho-analysts like Melanie Klein have developed play-therapy and play-techniques for the treatment and analysis of young problem children (31).

(7) Psycho-analysis has given impetus to such movements as "Child Guidance", "Mental Hygiene" and "Freedom of the child" movement. It is the child guidance movement that has led to the establishment of child guidance clinics which are rendering useful service to humanity. All these movements have accentuated the importance of the child as an individual. This is in line with "paedocentricism" which is the chief feature of modern education. The mental hygiene movement stimulated by this school of psychology has brought about a welcome change in the function of the school. The school should provide favourable environment for child development but the best development is to be taken in the sense of the best adjustment. "The School, under the influence of the mental hygiene movement, has swung from the view of teacher as a fact and skill mechanic to one which regards the most successful teacher as being the most successful engineer of desirable attitudes and well-adjusted behaviour" (14). The "Freedom" movement sponsored by the followers of Freud has popularised such concepts as 'free discipline'.

(8) The psycho-analytic study of young children emphasizes the importance of respecting the child's individuality at an early age. "The personality of the child and of the adult that he is to be, rests in the last resort on the inner-flux of forces within his own mind" (27). Hence we should not and cannot determine the lines along with his individuality shall develop. We should not cramp and control him by our own notions. This emphasis on the child's individuality favours the individualistic aim in education, the aim that is recognised in all individualistic practices in education.

(9) Psycho-analysis has brought to the forefront the very early years of the child for proper study and care. Most of the maladjustment among pupils can be traced to some incidents of early childhood.

Schools fail to cope with the more difficult problem children because they work on the wrong assumption that the pupil's school-career begins when he is formally enrolled in the first class. The Psychoanalysts point out that it is these early childhood experiences, which the school ordinarily ignores, "that help determine whether the youngster will be amenable to class-room controls, whether he will get along well with other children, and whether he will be interested in the type of activities favoured by the school. Many of child's class-room difficulties are the surface manifestations of a deep-rooted problem which has its origin in his preschool experiences". (40) It is the recognition of this fact that has enhanced the importance of nursery school education or pre-school education and pre-school care. Assuming that early childhood is the most critical period in the development of personality, psychoanalysts, indirectly, lay stress on proper parental education. Equipped with proper parental education which should include knowledge of nutrition of the child, emotional training, sex education, habit training and child care, parents can help in the growth of well-balanced personalities with mentally healthy attitudes toward life. Parents need to develop tolerance for childish difficulties and misdemeanours and patience in dealing with them. They need to realise that love is necessary for them and for their mental development.

(10) Psycho-analysis has discovered for us the reality and power of the super-ego in the early years. Freud has shown that the young child is by no means a creature of mere wish or impulse. "He has already within his own psyche powerful controlling and inhibiting tendencies". (27) The notion that it is necessary to put inhibition in the way of the child through threats and punishments is not correct because the so-called anti-social children or moral defectives have been found to suffer from too severe and overwhelming a conscience of the primitive sadistic type. Such children need love, sense of security and consideration, so that the tension caused by the sadistic super-ego may be released. This does not, however, mean that there is no need for the teacher to impress on the class the desirability of restrictions and restraints, or certain moral obligations. The parent and teacher should help build a strong super-ego, strong but healthy in the sense that it is not so severe as the primitive sadistic super-ego. This can be achieved through positive guidance and not through exasperated threats, whippings etc. "A sensible educator should provide a settled framework of control and routine, and definite help along social paths, yet with ample personal freedom. The child can bring out the good that is in him, provided he is given support against his fears of the bad. The adult or the teacher in charge of children has to accept the function of the super-ego. If he or she does not do that, she necessarily and automatically becomes to the child representative of his own bad aggressive self". (27).

(11) The Psycho-analytical theory has changed and affected the problem of revaluation of standards of behaviour. For example, we

are led to recognise the fact of infantile sexuality. We are made to tolerate some amount of open sexual behaviour such as masturbation, exhibitionism, 'rude' talk about the excretory processes, as found in the early childhood in the Nursery schools. We no longer regard children as abnormal for the display of such behaviour. Indirectly we have been warned that when sexual behaviour becomes flagrant and exaggerated children may need special psychological help in the form of some pursuits in non-sexual directions.

This sex-knowledge imparted to us has produced far reaching changes in the up-bringing of children. It has brought to the forefront the study of such problems as weaning, thumb-sucking, cleanliness and toilet training. All these problems have a bearing on nursery school education. Unsympathetic and wrong handling of these problems leads to emotional disturbances and personality deviations. For example, it has been found, that unnecessary and unusual frustrations during the anal period, like forcing the child to become toilet trained too early may produce anxiety-symptoms and functional disturbances, phobias and compulsions. Such children find it difficult to paint or to draw when they enter schools. Incidentally, psycho-analysis has established the importance of intelligent sex education at various stages.

(12) Nobody can deny the contributions of Psycho-analysis to the understanding of "maladjustments" in children's behaviour. Problem children or maladjusted children present a serious problem to a conscientious teacher. There are children who are obdurate or destructive; there are children who are aggressive, who steal and tell lies and who play the truant. There are others who withdraw into themselves, are unsocial and shy. Destructive and aggressive children may be giving expression to their hatred of the parent or parent-substitute. Those who steal may be symbolically stealing "the affection" which they need from their parents or teachers. Those who play the truant may be in need of a feeling of emotional security. Listless children or indifferent children may be heading for schizophrenia. Children who get into scrapes and want to be punished may be suffering from some guilt-complex. Those who take pleasure in criticising others and spreading stories about others may be merely projecting. Phobias and dislikes may be the result of transference and displacement.

Delinquents present a problem of their own. Psycho-analysis helps us by making us understand the unconscious motives behind stealing, lying, truancy, sexual transgression etc. It has shown us that the young delinquent, in majority of cases, suffers from conflicts. The conflict is between the unconscious needs and the demands of reality. Psycho-analysts have shown us that the environmental causes such as the broken home, poor economic conditions, bad neighbourhood, inadequate school programmes, lack of proper recreational facilities etc. are not important in themselves although they play an

important part in the adjustment of the individual. They are important inasmuch as they affect the emotional forces in the individual. They destroy the basis of emotional security which is the bulwark against maladjustment.

Another contribution of Psycho-analysis to the understanding of delinquents is the importance of experiences of early childhood. Kate Friedlander writes: "The unconscious motivation must be taken into account.....the roots of unconscious tendencies which influence our actions go back to experience of early childhood" (14).

(13): Not only have psycho-analysts emphasized the importance of emotions in the life and education of children, they have thrown light on the problems of emotional development from infancy to adulthood. This knowledge enables parents and teachers to adopt the right attitude to children when at home or in school. For example, the child starts going to school in the latency period. Towards the end of this period boys start making gangs, groups and secret societies. They do this as a kind of protest against the parents for not having been very good truth-tellers. They have their secrets, which they tell each other. In the school the same indifference or withdrawal is shown to the teacher. The teacher should not feel disconcerted. Such conduct should be understood and treated sympathetically. He must impress on them that he is not the natural enemy of the 'gang'. He can help the boys by organising group games, clubs and scouting. With the help of psycho-analytical knowledge we can explain the adolescent conflicts, sexual fixations and schizophrenic tendencies. Teachers can help the adolescent boy or girl by their balanced behaviour. Unreasonably indulgent woman-teachers prolong the homosexual phase. They can help their students by giving sex-instruction in a dispassionate and scientific way, when the need arises.

Thus we see that the teacher can help the school and the pupils a great deal if he knows the theory of psycho-analysis. The knowledge of psycho-analysis enables the teacher to understand the child better. "The content of the unconscious is an essential part of the pupil's nature, and must be known in a general way if the pupil is to be intelligently handled" (1). A knowledge of this method and its underlying principles can give a teacher the required knowledge and skill for obtaining the best educational results. From the daily slips of the tongue, accidents and omissions, the teacher can infer what strong motivations are seeking appropriate expression in the child's mind. Equipped with the psycho-analytical knowledge he can detect certain unusual behaviour and abnormalities and then hand over the case to specialists for proper treatment. He may discuss the problem with the child's parent. Psycho-analysis also helps the teacher to discover his own complexes and deviations from normal behaviour. This knowledge will make him cautious in handling children and he will behave intelligently towards them. He will see that he does not

add to the tensions already existing in the child's mind, tensions produced by the unnecessary restraints of school life, the strain of examinations, the humiliations that accompany the teacher's thoughtless sarcasms.

But a teacher cannot practice psycho-analysis (as a method) while teaching. It needs technical skill; it will interfere with the school programme. He need not arrange circumstances so that revelations of the child's inner urges may be made; he need not go out of his way to probe so as to discover biographical details that are not presented to him. The psycho-analytical and teaching situations differ from each other hence one and the same person should not be a teacher-cum-psycho-analyst. We should end with Adam's seasoned advice : "Psycho-analysis is surely not to be regarded as a matter of routine in the new Education, like sounding the lungs or taking the pulse at a school medical examination (1).

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GROUP PROCESSES IN THE CLASS-ROOM

18

Introduction

Treatment of the classroom as a functioning group has been conspicuous by its absence in Educational Psychology text-books. Group process is a comparatively new field of study and has not yet substantially influenced the theoretical as well as practical aspects of education. However, in recent years attention is being increasingly paid to the importance and study of group processes, as is evident from a comparatively larger number of studies reported in this area and from the publication of a yearbook on this problem.

Education is essentially a social process and the effectiveness of educational programmes in schools would depend on a number of things—functioning of classroom as a good learning group, teacher's success in arousing and sustaining pupils' interest in setting goals for themselves and achieving them, developing initiative and sense of responsibility in the pupils, better and more effective understanding between the teacher and the pupils, adjusting with new ways of learning and so on. All these are related to the group life in the school in which the teacher and the pupils are equally important partners. Education can be made more effective through better understanding of the processes underlying group life in the school.

In school programmes, the class-room group has a special place of importance because the success of instruction is strongly influenced by the way this group functions. The teachers being in a position of leadership in these groups will be able to handle them effectively, if they have the necessary knowledge of the functioning of groups. The purpose of this chapter is to contribute to this understanding.

We have to work in groups. It is only for a short time that we are alone while working or recreating ourselves. These groups may be large or small, formal or informal. Some knowledge

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about the formation and functioning of groups is a necessity for all of us, and more so for educational workers who have to deal with groups.

What is a group ?

A group has been defined in various ways. The various definitions stress the different aspects of the group. A good functional definition is given by Muzaffer Sherif as follows :

"A group is a social unit which consists of a number of individuals who stand in (more or less) definite status and role relationships to one another and which possesses a set of values or norms of its own regulating the behaviour of individual members, at least in matters of consequence to the group". (16)

As will be seen from this definition a group has a definite structure consisting of the status and role relations among the different members ; it has a set of norms (or standards of behaviour) for the members. A group has also some basis for its formation—some goals which are accepted by different members of the group.

According to Getzels and Thelen all working groups have the following factors in common : a goal, participants, leadership and relations to other groups and institutions (7).

The structure of a group :

When some individuals come together with some common goal in view and start interacting with one another, a group begins to take shape and acquires some structure in due course. The structure of a group is the pattern of relationships among the members that comes to stay in the group. The group process, as distinguished from group structure, is the pattern of behaviour in the group.

The structure of a group is formed on the basis of the interactions of the various members of the group. In the beginning the individuals meet and have exploratory interactions which help them to find out which individuals are capable of meeting the needs of the group, and to what extent. In other words, the exploratory interactions are directed at finding out the "needs-meeting potentiality" of different individuals. This helps in the development of some pattern of relationships among the individuals on the basis of expectations and their capacity to meet those expectations. The structure of the group is then formed. The structure takes better shape, when the relationships are better established.

The structure of a group, although stable in one sense, is always subject to change. The change occurs through group process. The behaviour of different individuals may change the pattern of expectations, and consequently the structure of the group undergoes a change.

Group Roles :

When the members of the group interact with one another and explore the needs-meeting potentiality, they also respond in terms of their capacity and willingness to meet the needs of the group. The responsibility of different individuals begins to be differentiated. In other words, the roles of different members emerge.

A role is the expected behaviour of a member of a group. According to Sargent (14) a person's role is the pattern or type of social behaviour which seems to him appropriate in a given situation in view of the demands and expectations of those in the group. A particular member of the group may be expected to initiate action, help in reaching decisions, follow up decision taken and so on. This member is assuming the role of leadership. In a working group each member of the group plays some role, and each member's role is quite important for the group. A particular member may be expected to (who is also capable of and willing to) clarify proposals or statements. He plays the role of a clarifier. Another member may be expected to propose action and he is playing the role of an action proposer. Similarly, different roles like the following may be taken by different individuals in the group : opinion-seeker, opinion-giver, interrogator, information provider, supporter (1).

Although a member in a group tends to repeat one role more often than others, it is not necessary that the same role is taken by the same individual every time. In a good working group, all the members take the different roles freely and get practice in doing so.

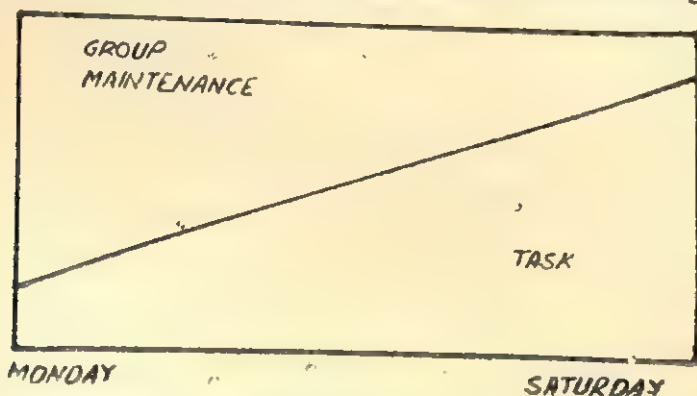
The main aim of a working group is to execute the task which it sets for itself. The various roles may either help in this aim or may hinder it. The roles which help in the achievement of the goal of the group may be of two types. The roles that help in maintaining and keeping up the morale of the group are called maintenance roles. The roles that help the group in the execution of its task are task-roles or task-oriented roles. On the other hand, roles which are directed at fulfilling the ego needs of the individual, often in conflict with group needs, are ego-centric roles.

Group-maintenance roles help in developing, promoting and maintaining the morale of the group. These roles are quite important as they help the group in keeping up its morale. A group cannot function well unless sufficient attention is paid to this aspect. Various things can be done by the different individuals to promote group morale. Morale can be maintained when a member is encouraged to express his opinion freely (encouraging expression), or recognition is given to a person who contributes to the progress of the group (giving recognition) or an attempt is made to point out common points between two apparently conflicting statements made by two different members (harmonising), or a member making a point is supported (supporting). These are different maintenance roles.

The task-roles help the group in moving towards its task. This is helped if an individual asks questions (interrogator), or wants to have more facts and data (information seeker), or provides such facts and data (information giver), or asks for opinion of other members of the group (opinion seeker), or gives his own opinion readily (opinion giver), or summarises what has been said in a group (summariser), or clarifies a point made by some other members (clarifier).

When an individual wants to use the group for satisfying his ego-needs, the work of the group suffers. Such ego-centric roles are not uncommon in working groups. An individual may be so dominant all the time that he may not allow other members to make their own contribution (dominator). Some member may be more interested in impressing upon the group that it was he who made the point, rather than contributing to the progress of the group (recognition seeker).

In a good working group the ego-centric roles are at the minimum. More attention is generally given to the group maintenance roles in the early stages of a group life. This helps in building the capacity of the group to proceed with its task. The time spent on building and improving group morale in the beginning gives good returns in the increased time spent by the group on its task later on. This can be better understood with the help of the following figure.



As the group proceeds in its work from Monday to Saturday the area in the group maintenance triangle goes on decreasing, whereas that in the task quadrilateral goes on increasing. In other words, less time will be needed for group maintenance towards the end if sufficient attention is paid to it in the beginning.

Group Norms

When a group is formed, the members of the group set up, knowingly or unknowingly, certain standards of behaviour, that are to be followed by them. These are called norms. Norms help an

instructional group, as any other group, in its smooth working. They help the various members clarify their respective roles and responsibilities.

The norms may either be imposed on the group through some set of rules, or may develop as a result of the functioning of the group. It is better if the norms evolve and develop in a class-room group as the pupils interact with one another, the teacher helping them with his advice. The norms will differ in their effectiveness to the degree they affect the scope of the behaviour of the pupils. In some cases the norms may be confined to instructional problems and work, while in others these may include other behaviour dimensions as well.

Norms in a classroom group should be properly integrated. Different norms may exist for different purposes. Sometimes there may be a conflict in norms. There may, for example, be a conflict between norms for scholastic work, for social activities and for productive work. The teacher should help in integrating norms in such cases.

Classroom as a group :

Classroom functions as a group. We have already seen that every group has some structure. Classroom as an instructional group operates and helps its members satisfy their needs and achieve the goals.

Structure of the classroom :

Structure in a group denotes the pattern of relationships that has achieved some stability. Different classrooms may have different structures. In fact, every classroom has its own unique structure.

The structure of a classroom is shaped by many forces. The statutory requirements of the institution is one such force. The rules followed by the institution, and consequently imposed on the teachers and pupils, determine the structure of the classroom. In a Public school, for example, the monetary system would give a special shape to the classroom groups. A school banning school parliament and elected committees will have another typical group structure in the classroom. A school requiring its pupils to run the school occasionally or for a fixed period would find another structure in the classrooms.

Cultural factors and social customs of the community also influence greatly the structuring of the classroom. The authoritarian structure in the classrooms in most of Indian schools takes inspiration from the social norms of the community.

Equally important are the needs of the members of the school community—pupils, teachers, other personnel, particularly the Headmaster. Pupils form the major part of the classroom group and

their needs are bound to influence the shaping of its structure. These needs relate to growth and development, prestige-seeking and recognition, social relations and friendships, information-seeking and learning. The needs of other personnel, like teachers, and the headmaster also shape the structure of the classroom.

The classroom structure can be understood by understanding its different/aspects or dimensions. The structural dimensions can be seen from different points of view. Flander has suggested three dimensions—authority, goal orientation and social access—and has formulated three postulates to explain the structural characteristics of classroom groups. Various other dimensions have been suggested by some other authorities. These dimensions help in understanding the structure of a given classroom.

The most important factor in a group is the task it sets for itself. This would determine its structural characteristic also. The *task structure* may include what Flander calls "goal orientation" (6). It is quite important how the various members perceive the task or the goal set by the group. If the pupils in a particular classroom perceive the task they are doing as quite significant, this would give seriousness of purpose to the classroom work and the structure would be determined that way. If the pupils and the teachers do not perceive the task or the goal as significant, the classroom as a group will be quite different.

Another dimension is the *authority structure*. The pattern of authority exercised may be different from one classroom to the other. Authority may be either completely vested in the teacher or may be distributed among the pupils in different patterns. This would determine the amount of responsibility shared by the pupils.

Equally important is *communication structure*. The communication channel may be one-way, in which case the teacher talks to the pupils who passively listen. Or it may be circular, allowing pupils to participate in the communication process. The communication structure would determine what Flander calls "social access." In a mixed class the communication pattern may be dichotomous—boys communicating with boys and girls with girls.

Relationships within the group. The structure of the classroom group will determine the relationships among the members of the group. These relationships can be seen from the point of view of the functions of the group.

Decision making is one important function of the group. Who makes the decisions and how they are made, will determine the within-group relationships. If the teacher makes all decisions and the pupils only carry out these decisions, the relation of the teacher with the pupils will be of formal authoritarian type. But if the pupils contribute to decision making, the relationship will take a different shape.

Similarly the carrying out of the task or problem solving would be an important factor in determining relationships. Social acceptance may be another factor.

Relationships with other groups. The classroom maintains relationship with various outside groups. Some groups are within the school. One classroom group has to deal with other classroom-groups. This would be necessary for promoting many types of behaviour in the pupils. The class-rooms meet in common school programmes, like the school parliament, debates and discussions games and sports, cultural programmes, community work and school celebrations. The effectiveness of the classroom programmes would be determined by the pattern of relationships which the different classroom groups are able to foster within the school community.

Groups outside the school maintain relationships with and influence the working of the school. The school occupies a place of importance in the community. This is particularly significant in the case of our country where the school has to play the role of bringing about desired social change in the community. If the school is to function as a change agent and as a forum for the community for their various developmental activities, it has to pay attention to its relationships with the various outside groups.

The classroom may have to develop relations with the community in conducting certain activities like community survey, cleanliness drive, social service. Besides, the community leaders may be invited to the school.

The parents also exert influence on the school programmes both indirectly and directly. The pressure may come through pupils. The classroom as a group can effectively foster and make use of the relationships with outside groups.

The role of the teacher—As discussed above the role indicates the behaviour which seems to be appropriate for an individual in the situation in terms of the demands and expectations of the group. The role of the teacher in the classroom is very important. His role may be determined by the rules of the institution. These rules may specify the duties and obligations of the teacher in the various capacities. He performs a variety of duties and fulfils a number of obligations. These determine his roles.

Instructional roles—The main duty of the teacher is to function as a good instructor. He is expected to teach the pupils as effectively as possible. His instructional roles are of many kinds.

The teacher helps the pupils in their learning. As a first step he has to see whether the pupils are prepared to learn. He has to make sure of the preparedness; in other words, he has to motivate them. In this role of the motivator the teacher promotes readiness

for learning. This is an important role. Many teachers, in spite of their genuine enthusiasm, fail to carry home effectively what they want to teach, because they do not pay much attention to this important aspect of their role.

The teacher has to function as a learning agent. In this role he helps the pupils, who are properly motivated, to learn the task set for them. In this role the teacher may have to pay attention to four main ways of the learning agent. The teacher *tells* i. e., speaks to the pupils; he allows questions and *explains*; he demonstrates before the pupils what he has been explaining; and he *provides practice* possibilities for the pupils in that task. The main ways of learning—listening, asking, seeing and doing—are thus adequately followed.

The teacher has the role of evaluator also. After he has gone through the instructional programmes, he tries to find out to what extent the programme has been successful. This he does by testing children, asking them questions, informally discussing with them and using such other devices as he may find useful.

Extra-instructional roles :

The teacher is related to pupils not only in the instructional roles, but in various other capacities. He comes into contact with them in the leadership role in various situations. The teacher may function as a librarian, as a games-supervisor, as a convener of social activities, as an N.C.C. incharge and in various other functions. All these are important activities and demand attention of the teacher.

Administrative role :

The teacher is also an administrator. He has to maintain discipline in his classroom, has to deal with fees of the pupils, has to maintain registers and call attendance and do various other administrative duties.

Membership role : The teacher is a member of the school community and of the staff council. In this role he functions as a member, contributing to the building of morale and efficient functioning of the staff of his institution.

Liaison-agent rôle. The teacher helps maintaining relationship of the school with the community. It is through the teacher that instructional and other programmes of the school are conveyed to the community. He may have to organise meetings of parents; cultural programmes in the school for parents and undertake other measures to promote school-community relations.

It is necessary that the teacher thoroughly prepares himself for these various roles. The preparation starts in the training college

where he is provided adequate acquaintance with the roles he has to assume in his capacity as a teacher. But it is only the beginning of the preparation. The teacher has to carry on this preparation through in-service programmes, school staff activities and self-study. These various programmes help the teacher gather more knowledge about the roles and in developing role skills. However, role skills can be developed through well-planned programmes and proper evaluative methods.

The school principal, may help the teacher in accepting his roles. A teacher may not find some roles quite acceptable and may need sympathetic help from the principal or the headmaster in this direction.

Goal setting—The effectiveness of the classroom as a group is contributed by a number of factors. One factor is the setting of goals. Gibb has defined a group goal as "any interdependent need system which arouses, maintains, and directs group behaviour" (8). The group has something to achieve. The classroom group is formed mainly for the purpose of learning. As such, the classroom group can be termed a task-centred group—a group mainly concerned with achieving a task.

The goals in the classroom may either be already set in terms of the requirements, or the goals may be set with the help of the members of the group, the pupils. The goals may be at the individual level, the pupils having their own goals, or at the group level. The group should function effectively in the setting of goals for itself. This helps in securing the participation of the pupils, as it ensures wider involvement.

Group climate—The way a classroom group functions determines how the members of the group feel about participating in the group. The characteristics of a group that promotes acceptance or rejection of the members in a group may be termed the group climate. If a group has permissive (or supportive) climate, the members of the group will be encouraged to participate widely. Permissive climate is chiefly characterised by encouragement and acceptance. Contrasted with this is the defensive climate which is characterised by rejection, aggression and order-giving. The two types of climate have their contrasting effects. While permissive climate helps in the development of the individual, satisfies the needs and promotes involvement and consequent participation of the individual; defensive climate retards growth, increases emotional conflict and defensiveness and causes withdrawal of the members from the group.

The teacher may do whatever he can to build permissive atmosphere in the classroom. This can be done through encouraging pupils to express themselves, ask questions, propose action, share decision-making and discuss matters frankly.

Group conflicts in the class-room : As in any other group, conflicts may arise in the class-room group. The conflicts may either be within the group or may be with other groups. The conflicts often arising within the class-room group lead to defensiveness. A conflict saps the energy of the group and undermines the achievement of the tasks. The teacher should do his maximum to keep the conflicts to the minimum and deal effectively with those that arise.

The conflicts may arise if the teacher does not pay much attention to the emotional needs of pupils. The teacher may involve the pupils at each stage of decision-making and problem-solving. This may help in minimizing the conflicts. Free and frank discussion may be quite effective.

Sometimes the conflicts may be due to conflicts within the various roles. The teacher may, for example, find it difficult to adjust his instructional roles with his administrative and non-instructional roles. In such cases a free discussion with the principal or headmaster may be helpful. There should be permissive atmosphere in the whole school and the teachers should feel free to discuss such matters with the principal and in staff meetings.

By now it is quite clear that a class-room is a group and operates as any task-centred group would operate. The group makes progress towards its goal through concentrated efforts at the setting and achievement of goals. These depend to a large extent on the effectiveness of the leadership of the teacher.

Leadership—the changing concept :

The concept of leadership has undergone a great change in recent years. Leadership was sometimes conceived in terms of qualities a great man possessed and which were thought to be inborn qualities. However, the more important theory of leadership was the "trait theory", according to which leadership consists of a number of qualities or traits which some persons possess more than others and are, therefore, leaders in various groups. A large number of studies were made to identify leadership-traits. Not much contribution was made by this theory to the understanding of leadership behaviour.

Attempts to understand leadership were made through such approaches as situational approach (that different situations give rise to different leaders), functional role approach (leadership is a shared behaviour according to the various roles performed). A better approach to the understanding of leadership has been the style of leadership. The famous studies of Lippitt and White showed that leadership could be of three types : authoritarian (when the leader

decides), democratic (when the group decides) and laissez faire (when each individual decides for himself).

It is difficult to succinctly define leadership. For an instructional group leadership can be understood as the behaviour that is most effective in the task-goal of the group, in moving towards the realization of the goal. As such, the concept of leadership is extricated from the controversy of appointed or elected leaders. This concept helps in understanding the functional nature of leadership in an instructional group.

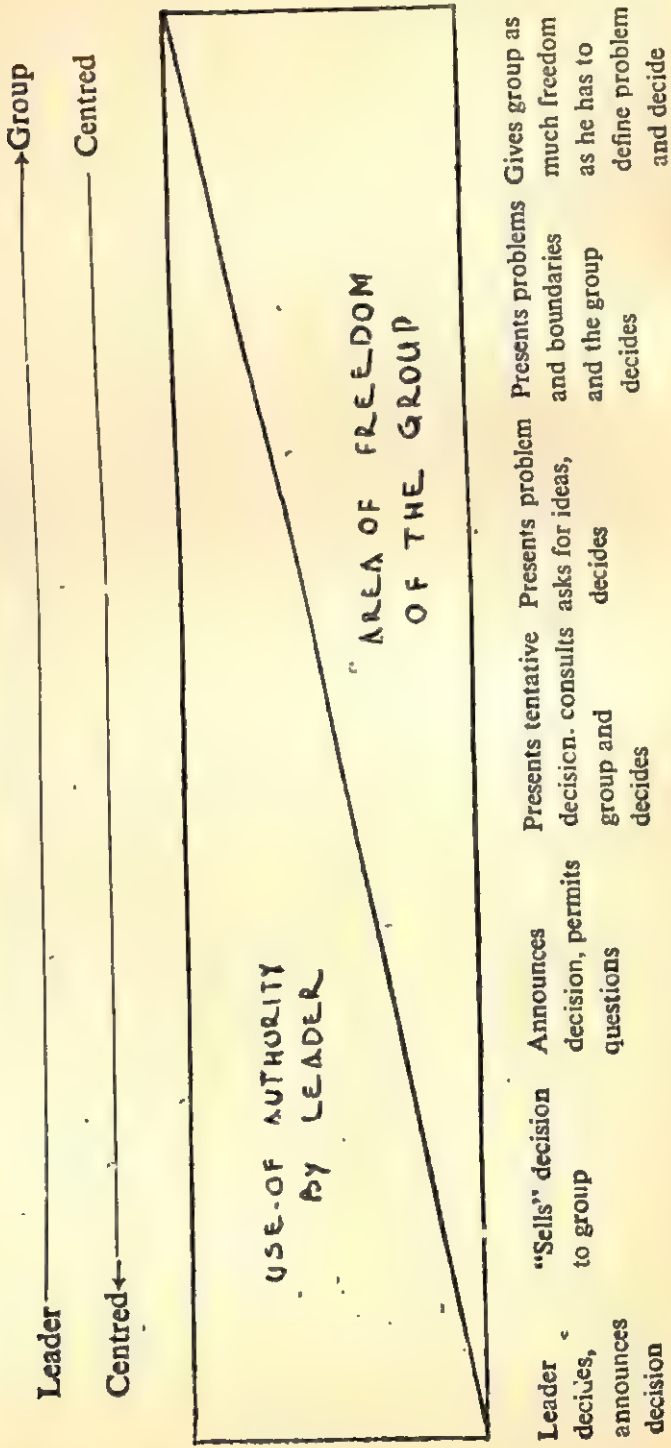
Model of leadership behaviour :

One of the main tasks of an instructional group is to help each member contribute effectively towards the attainment of the task-goals. In other words, the instructional group helps in promoting leadership behaviour of each member. Since the teacher has to function as a leader most of the time (his is the primary duty of moving the group in the direction of the goal), he has to analyse his leadership behaviour and strive to make this behaviour as effective as possible.

The studies of Lippitt and White (11) have shown that democratic leadership (in which the decision-making process is shared by the group) is much more effective in a task-centred group. It is, however, not correct to imagine that democratic and authoritarian leadership are dichotomous. In fact, this is a continuum with two poles. The teacher, or any other leader, can strive to move on the continuum. This can be better understood with the help of the model borrowed from W.H. Schmidt (15).

The extreme poles of leadership-behaviour are the leader-centred and the group-centred poles. At the one extreme the leader uses his authority exclusively, while at the other, the group is invested with such authority. However, the authority of the leader decreases and that of the group increases, as we move on the continuum. Schmidt has represented this in a graphic way as follows :

CONTINUUM OF LEADER BEHAVIOUR



GROUP PROCESSES IN THE CLASS-ROOM

Leadership behaviour can best be understood with the help of this continuum. The leader should try to move on the continuum from the left-hand extreme to the right-hand one. However, he should assess the needs of the group and various other forces that operate, while choosing his position on the continuum.

Teacher as a leader : The teacher has to share the main responsibility of moving the group in the direction of goal-achievement. In this capacity he is a status leader. However, the important question in the case of leadership-behaviour is not one of his status but that of the way he exercises leadership. In any task-oriented group, the function of the leader is uniquely important. The teacher should, therefore, decide *how* he should function as a leader.

The teacher as a leader, has to see that the goals are set for the group and that the entire group moves toward these goals. This he can best ensure by assessing the needs of the group and by creating conditions that promote this movement. The teacher in his leadership role keeps as the main objective not only the achievement of the task-goal, but also the maintenance of morale and the promotion of individual involvement and participation. This helps in the ultimate effective achievement of the task-goals.

The teacher, as a leader, helps in building motivation in pupils, creates permissive atmosphere, supports the sense of belongingness and achievement in pupils, promotes their widespread participation and introduces a spirit of challenge for the pupils to strive to their best.

Student leadership : Since leadership in the classroom group is aimed at promoting group work, it should be shared by pupils. A good teacher helps pupils in developing skills that promote their leadership behaviour.

Some students may function as leaders by being appointed as such by the teacher. In such a case also, the pupils should learn how best to strive to move in their behaviour on the continuum towards group decisions.

Students also exercise leadership by virtue of their influence among the peer-group. In the adolescent groups this assumes a very strong character. Strong leaders tend to form gangs. If such students do not find satisfaction of their needs and fail to perceive the instructional programmes as worthwhile and significant, they are likely to withdraw from the classroom group and form strong peer-groups with different goals and norms, often in the shape of gangs.

It is quite important that such students get opportunities to satisfy their needs of acceptance, self-importance, creativity and responsibility. This would help them in developing useful skills of group work and leadership behaviour.

Communication in the classroom

The basic need in an instructional group is to ensure that what is being taught reaches the pupils in an effective way. In other words, the teacher has to ensure that what is intended to be communicated is effectively done.

Communication thus becomes the focal and the central problem in a classroom group. Communication is the process and the act of conveying *and* receiving messages being transmitted. A teacher provides information to the pupils, helps to develop in them knowledge skills, attitudes and values. All this is to be properly conveyed by the teacher and properly received by the pupils. This is the main purpose of communication.

If the teacher wants to convey information, develop skills and attitudes, he should know how far he is being successful in doing so. The purpose of communication is also to find out how pupils are receiving what is being conveyed—whether they have any doubts, whether they dislike some ways in which the teacher is trying to reach them and so on. This kind of feedback helps the teacher in gaining insight into the effects of his communication and in planning to improve communication.

Communication involves relationship between one who is giving a message and the one who is receiving it. It may be necessary for the person giving a message to know what kind of skills he needs to be able to send the message as quickly and effectively as possible, what strategies he should employ and how he should communicate with an individual or a group so as to be quite effective.

The models of communication—Communication in a classroom group can take place in three ways. The teacher communicates something and the pupils can ask questions only when the teacher permits them to. This would be a one-way model of communication. The message passes from the teacher to the group and comes back rarely. Apparently in this model the teacher does not know how the message is being received; pupils do not get the opportunity to clarify doubts and to digest the information being received by them.

A better model is for the teacher to address the group who feel free to ask the teacher questions at any time they like. The teacher receives the questions and answers them. This is a two-way model. The message is being sent from the teacher to the group which sends back its reactions. In this way the teacher and the group interact.

A still better model is that of circular communication. Communication to be effective should be a process of continuous exchange. This is ensured in an arrangement in which the various members of the group get opportunity of taking part in the process. In that case communication does not proceed from the teacher to pupils and back

to the teacher, but pupils react to what the teacher says, comment on each other's statements and questions and participate freely in the discussion. Communication becomes circular.

The concept of feedback is quite important in interpersonal communication in a group. We have already seen that things are not clarified unless the members in a group react freely and frankly to what is said or proposed by one member. When the members are expressing their opinions freely, or reacting freely, they are said to be giving feedback to the proposal.

Feedback helps communication in many ways. It not only provides opportunity for the clarification of ideas, but also helps the various members of the group get involved in the task of the group through active participation. It helps in developing skills of diagnosis and improvement of group work.

Factors influencing communication. As we have seen, an act of communication involves two individuals—one who says something and the other who receives it. The factors influencing communication are also related to these two. These factors would determine what the individual would say and what the other individual would hear.

One set of factors is concerned with the psychological make-up of the individual. What the individual says or hears (perceives) is determined greatly by what motives he has, or what his needs are, or what set of values and beliefs he possesses.

Expectations also play an important role. Persons expecting something would hear a message in time with that expectation.

The perceived norms of the group also affect communication. The standards of behaviour expected of the members of the group determine both what an individual would say and what he would hear.

Facilitating communication. One of the main problems in instructional groups is that of facilitating communication in the group. Communication can be greatly facilitated by trying to make it truly circular.

Some training is needed by group members in connection with giving and receiving of feedback. Feedback should be provided by a member in such a way that it does not hurt the feelings of other members of the group. This would require some guided practice. Similarly the skill of taking the feedback also requires training and practice. Sometimes feedback blocks communication through a 'self confirming process'. An individual who feels diffident that he does not possess the ability to clarify things may be blocked if direct feedback is given to what he ventures to say in the group. The members should be trained to receive feedback quite naturally.

A good climate in the group greatly helps the process of communication. Attempts should be made to encourage members to express themselves freely and frankly. This facilitates good discussion and useful exchange of ideas and opinions.

The role of the teacher in facilitating communication need not be overemphasized. The teacher can help in skilled diagnosis of the difficulties in communication and can help pupils develop skills in communicating effectively.

Studying the classroom Group

The teacher will find it necessary to study the classroom group with which he is dealing, so that he may be able to understand it in a better way. He can employ simple and systematic methods for this purpose. Basically there are two methods of studying groups. We may either observe a group at work, or may analyse the records of the work of the group which may be obtained in a variety of ways.

The oldest method of studying a group is observation. Group behaviour can be effectively studied and understood through systematic and planned observation. The observation, to be scientific, should be objective, reliable and focussed on the purpose of the study. Various attempts have been made to standardise the process of observation, the methods of recording and analysis of the observed data. The famous method of Bales of Group Interaction Process is an example (1).

Observational studies can be made either with the groups in their natural setting, or some special groups may be formed in a laboratory situation to meet any special purpose. Study of a classroom group, or of a group of boys at the playground is an example of the former. The latter type of groups can be formed to study special features of behaviour.

The first step in planning and observation-study of a group is to be clear about what is to be observed. The teacher may like to study the structure of the group, or the distribution of participation in the group, or the pattern of communication or the group atmosphere. The teacher is likely to be confused if he is not clear as to what he wants to observe, and his observation is likely to be diffused and unreliable.

Once the teacher defines the area of his observation, he may think of situations, devise or simulate such situations, in which the referent can best be revealed. All group situations are not equally good for observation of all dimensions of group behaviour. In order to observe the distribution of participation in a group, for example, the teacher may set up a discussion situation interesting to the pupils of a class. Such situations should also be amenable to observation.

The teacher should then select or devise the tools of observation. The simple way is to break the behaviour to be observed into a number of dimensions and prepare a form in which each dimension can be observed through some concrete form of behaviour (like, making statements, asking questions, asking help, time spent with a friend etc.). The period of observation can be broken into smaller units of time so that it may be manageable. A teacher can also use some observation forms or schedules.

The teacher should take care to see that his presence in the group does not affect the normal functioning of the group and make the situation artificial. The observation may be "hidden" as far as possible. The best device for this is to use a one-way screen so that the observer is not noticed or seen by the group which can be clearly seen by the observer. If the teacher does not have such a device available he may sit near the group appearing to be busy with some other work and may take observation-notes or complete the observation-schedule.

The reliability of observation can be ensured by having more than one person observe the situation. The observations can in this case be compared and pooled.

The teacher should be cautious in interpreting his observation data. He should not take the data to be absolutely valid and should not try to generalise on the basis of some observations. He may check the observations from time to time to increase their reliability.

Analysis of records :

The structure and processes of a group can be studied by analysing available records of the work of the group. These records may be in any of the following forms :

- (a) Diaries, note-books, autobiographical notes, written by the members of the group or anecdotal records maintained by other persons.
- (b) Records based on questions asked. The questions may be either orally asked (generally called interviews) or may be given to the members of the group in a written form (generally as a questionnaire or a checklist or an inventory or a test). Various devices may be used to analyse such records. Sociometry as a technique has been developed as a good method of studying a group, and will be separately dealt below.
- (c) Records of the group work. These records may be in any of the following forms :
 - (i) Verbatim record of the contents of a group meeting. These are generally stenographic verbatim records.

- (ii) Tape record of a group meeting—In this record the emotional tones of the speakers may also be analysed.
- (iii) Silent movie record—This may help in analysing the gestures, emotional expressions.
- (iv) Sound—movie. This may help to analyse both the content of the talks as well as other important factors.

Special methods may be required to analyse the records available in the form of running accounts of meetings or movies etc.

Sociometry

As seen above sociometry is a special method of obtaining and analysing records in studying a group. These records may be obtained either through oral questions or through written responses. It has proved to be a good method of studying a classroom group (9).

In simple words sociometric technique finds out who chooses to be associated with whom in a group. The customary method is to ask each member of the group to indicate with whom he would like to be associated for a particular purpose. On the basis of the answer received from all the members of the group, it can be found how many times each member is chosen (which becomes his sociometric status).

Sociometric data reveal a variety of things about each member of the group—his sociometric status, his relations with other members, his perception of other members and so on.

Sociometric data also help in understanding the group. The structure of the group can be objectively studied. The group may be revealed to have a number of sub-groups based on sex, age, castes, family, profession, cultural affinity etc. It may also show who the real leaders are. The 'stars' (overchosen) or 'isolates' (less chosen) may also throw light on the group structure. Sociometric data may be of great help to the teacher in understanding the dynamics of the group.

Sociometric data can be treated in many ways. These can be tabulated in the first instance. They can be presented in a graphic form showing the positions of the various members of the group and how they are related to one another in respect of choice. This is called sociogram. The data can also be treated statistically and various types of indices can be found out.

The process of change :

The dynamic nature of instructional groups demands a continuous effort, on the part of the groups to improve their structure, process and work. It may be worthwhile to pay some attention to this aspect.

The improvement of the work of the group results from the improvement of the members in their behaviour in relation to some particular aspect of work. The process of improvement or change takes place through certain stages.

The first requirement of improvement or change is a feeling of dissatisfaction on the part of the individual or the group with reference to the particular aspect of work. If an individual or a group remains satiated, no improvement can take place. This awareness of something lacking leads to a need for improvement or change.

Dissatisfaction may result in disgruntled behaviour if this is not followed by hope for improvement. When an individual or a group is dissatisfied and at the same time is hopeful that something can be done to improve the situation, change can be effected.

The group or the individual should be clear about where the improvement is needed. In other words, the problem should be clear. In many cases the problem is not clear enough and dissatisfaction does not lead to proper efforts at improvement. The problem can be clarified through efforts at understanding its nature by constantly questioning the various aspects and by collecting preliminary evidence. Sometimes the problem may come out to be quite different from what was originally thought, on collecting evidence about it.

After the problem has been analysed, it is necessary to find out the various reasons of the difficulty. These help in viewing the various dimensions of the problem.

The next stage is that of selecting the solutions for the problem. Before a solution is tried, a number of solutions are tested in imagination and a final solution is taken up (an hypothesis is selected) for trying out (5).

The course of action can be planned, keeping in view the various resources. The action is carried out and finally it is found out whether the action led to the solution of the problem. This is evaluation. Evaluation is also systematically planned.

This, in short, is the scientific way in which a person or a group can go about improvement of its work. This has been developed in education in the form of 'action research', that is, scientific way adopted by a practitioner in improving his practice (3).

Lewin suggested that the process of social change passes through three main stages : unfreezing (*i.e.*, disturbing the equilibrium, creating need for change), moving in the direction of change, and freezing (*i.e.*, stabilisation of the changed situation). Lewin's original theory has been very elaborately developed by Lippitt *et al* with suitable case studies of social change (11).

Facilitating change : Improvement or change can be facilitated by helping the change process at the various stages. One of the main sources of help is good consultation. A good consultant can help in the development of consciousness for change, in collecting evidence for the clarification of the problem, in seeking hypotheses, in selecting a hypothesis, in planning of action programme and in the evaluation of the action programme.

Permissive atmosphere greatly helps improvement. An individual or a group should not feel insecure in experimenting in some respects. If the experimentations are encouraged, people feel free to think out ways of improving the various practices. A defensive climate discourages experimentation and helps in the keeping of the status quo.

Proper motivation also facilitates improvement. This could be given in many ways. People may be encouraged, proper consultation services may be made available, facilities to discuss and talk about experiments may be given or some incentives may be provided. All these may help people feel free to experiment and attempt to improve their practices.

Group Dynamics—a Basic Approach

Education is a continuous process of growth and development. Education helps the individuals develop through their effective membership of the various groups. The behaviour of the individual members and of the groups can be better understood if one views the whole process as one of interaction. Moreover, and this is even more important, change and improvement in education can be better effected through the study of the interactional processes at work in the instructional groups.

The various facts about individual and group life may better be understood in terms of group dynamics. From this point of view learning is not a static process of the impinging of the stimulus on the organism. It can be properly studied as a process of interaction of an individual and the situation. Learning can be promoted in a group situation (2).

Unfortunately much less attention has been paid to the dynamic aspect of learning. It is, for example, more important in an educational situation for an individual to internalise whatever he learns rather than have learning only at the verbal level. This fact is often overlooked. Similarly various other psychological concepts can be understood in interactional terms.

The ultimate aim of education is to help in the change of behaviour of the child. This can be achieved by studying the behaviour of the child, not only as an individual, but as a member

of a group, a group which is so important and dynamic. The child can be much better understood if we understand the dynamics of the structure and the process of the group he belongs to or in which he works.

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Mental Hygiene Approach to Education

The concept of mental health in and through education has come to stay. There are forces, movements and trends in modern educational practice which are indicative of this new approach in education. Teachers, for example, are increasingly becoming aware of the part played by feelings and emotions in growth and development including learning. The traditional approach lays greater stress on intelligence and will. It assumes that children always know why they do what they do, and can control their behaviour if they want to. Thus the child who misbehaves, according to this viewpoint, can control or inhibit his misbehaviour by exercising his will. On the other hand, the mental-hygiene approach assumes that behaviour is complex and its causes lie deep within the emotions. It recognises that the deepest and most powerful currents of human motivation are emotional. Hence, the emphasis as shown in books and articles written recently for parents and teachers, has changed from being concerned with the physical conditions of children, or with techniques for direction and control, to concern for their emotional health.

Teachers are being helped to think of behaviour in terms of causes rather than in a symptomatic fashion in their dealings with children. They are being advised to follow the dynamic rather than the surface approach. The dynamic approach will enable them to attain a better understanding of the background, attitudes, feelings worries of children they supervise and to work more effectively with them. A study made by Wilkinson and Ojemann (26) gives evidence that supports this hypothesis. They write "when teachers come to understand the emotional basis of their pupils' behaviour better, the children's attitudes towards the school becomes more favourable—and they make better progress in their school work."

Another indication of the mental hygiene approach is the importance that is being attached to personal and human factors in education. The older or traditional approach to education tends to *depersonalise* the classroom situation as well as to deny the importance of emotions and feelings. It ignores the significance of interpersonal relations that are an important part of what goes on in the classroom, and in the school. It looks upon the children in the class as a sort of *captive audience*. The truth, however, is that classes

do not behave like captive audiences. They are far more than collections of unrelated individuals. They have an organic life of their own, above and beyond the lives of the individuals who compose them.

The emphasis on this sound perspective is found in another way also. Teachers are making attempts to provide adequately for individual differences in interest and ability and to give children opportunities for finding satisfaction in creative work. The mental hygiene approach assumes that expression and release, through worthy creative endeavour are demanded by growing minds and bodies. This urge for creativity is being satisfied in many ways—through handwork, music, writing, dramatisation and other play and recreational activities. This is applicable both to students and teachers.

From the brief discussion above, it may be seen that the emphasis on mental health or hygiene in and through education is in accord with the objectives stressed by progressive-minded people in education. These forward-looking people seek, as the goal of education, the maximum development of every boy according to his unique nature and his needs. It is in accord with the consideration that is given to basic human needs in the development of curricula and with the resistance that subject matter and experience be selected to satisfy developmental tasks. (11)

Mental Health—Its Meaning and Nature

It may be necessary here to define and discuss the meaning and nature of mental health before we see what and how educational practices can be utilised in our classrooms and schools for the attainment of the optimum development of the child or his complete health, which is our goal in education.

A healthy individual is not only physically healthy, but is also mentally healthy. The modern concept of health extends beyond the proper functioning of the body. It includes a sound, efficient mind and controlled emotions. 'Health is a state of being hale, sound or whole in body and mind.' It means that both body and mind are working efficiently and harmoniously. Man is an integrated psychosomatic unit, whose behaviour is determined by both physical and mental factors.

Mental health which today is recognised as an important aspect of one's total health status, is a basic factor that contributes to the maintenance of physical health as well as social effectiveness.

It is the normal state of well-being, and in the words of Johns, Sutton and Webster, "is a positive but relative quality of life. It is a condition which is characteristic of the average person who meets

the demands of life on the basis of his own capacities and limitations"(13). By the word 'relative' is implied that the degree of mental health which an individual enjoys at a time is continuously changing.

It is not mere absence of mental illness that constitutes mental health. On the other hand, it is a positive, active quality of the individual's daily living. This quality of living is manifest in the behaviour of an individual whose body and mind are working together in the same direction. His thoughts, feelings and actions function harmoniously towards the common end. It means the ability to balance feelings, desires, ambitions and ideals in one's daily living. It means the ability to face and accept the realities of life. It connotes such habits of work and attitudes towards people and things that bring maximum satisfaction and happiness to the individual. But the individual has to get this satisfaction and happiness without any friction with the social order or group to which he or she belongs.

From this, one can conclude that mental health has two important aspects. It is both individual and social. The individual aspect connotes that the individual is internally adjusted. He is self-confident, adequate and free from internal conflicts and tensions or inconsistencies. He is skilful enough to be able to adapt to new situations. But he achieves this internal adjustment in a social set-up. Society has certain value systems, customs and traditions by which it governs itself and promotes the general welfare of its members. It is within this social framework that the internal adjustment has to be built up. Only then, the individual becomes a person who is acceptable as a member of his society.

It is an undeniable fact that social forces are in constant flux. They are constantly moving and changing. Similarly, our mental adjustment is also affected by various stresses. As such, mental health is a process of adjustment which involves compromise and adaptation, growth and continuity. Because of the significance of individual and social aspects, some psychologists have defined mental health as the ability of the individual to make personal and social adjustments.

It will be pertinent here to explain the word 'adjustment'. If one can establish a satisfactory relationship between himself and his environment, between his needs, and desires and those of other people, or if one can meet the demands of a situation, he has achieved adjustment. Adjustment results in happiness because it implies that emotional conflicts and tensions have been resolved and relieved. Keeping this criterion in mind, one can say that a mentally healthy teacher will be able to make successful adjustments that are needed by the nature of his job—adjustment to his strenuous life, to work and study.

Other definitions of mental health refer to such abilities as of making decisions, of assuming responsibilities in accordance with one's capacities, of finding satisfaction, success and happiness in accomplishment of everyday tasks, of living effectively with others and of showing socially considerate behaviour.

Characteristics of a Mentally Healthy Individual

From the discussion above, we can deduce certain characteristics that a mentally healthy individual or a well-adjusted person possesses or develops in his daily living. These characteristics can serve as criteria for optimum mental health.

- (i) A well-adjusted person has some insight into and an understanding of his motives, desires, his weaknesses and strong points. He can evaluate his behaviour objectively and can accept his short-comings and weaknesses.
- (ii) He has a sense of personal worth, feels worthwhile and important. He has self-respect, and feels secure in the group.
- (iii) Besides this security as a member of the group, such a person feels that he is wanted and loved. In other words, he has a sense of personal security.
- (iv) He has faith in his ability to succeed; he believes that he will do reasonably well whatever he undertakes. He solves his problems largely by his own initiative and effort. He feels confident of himself in his everyday life, more or less effectively.
- (v) A well-adjusted person or a mentally healthy person can get along with other people. This means he has an understanding of other people's motives and problems. He appreciates the many differences that he finds in people. Moreover, he can give and accept love, can form friendships which are satisfying and lasting and which give him a feeling of belongingness.
- (vi) Such a person has some understanding of his environment and of the forces with which he must deal. Equipped with this understanding, he plans ahead but does not fear the future. He has the capacity to face realities rationally and objectively.
- (vii) He has developed a philosophy of life that gives meaning and purpose to his daily activities. This philosophy belongs to this world and discourages the tendency to withdraw or escape from the world. It

makes him do something concrete about his problems as they arise. He does not evade responsibility or duty.

- (viii) Such a person lives in a world of reality rather than fantasy. Reality rather than wishes or imaginary fears govern his behaviour.
- (ix) He has developed a capacity to tolerate frustrations and disappointments in his daily life.
- (x) He shows emotional maturity in his behaviour. This means that he is able to regulate such emotions as fear, anger, love, jealousy and expresses them in a socially desirable manner. "He does not go to pieces as a result of his fears, anger and worries."
- (xi) He has a rational attitude towards problems of his physical health. He maintains a daily routine of health practices which promote healthful living. He practices good health habits with regard to nutrition, sleep, rest, relaxation, physical activity, personal cleanliness and protection from disease.
- (xii) He is able to think for himself and can make his own decisions. He thinks clearly and constructively in solving his problems.
- (xiii) He has a variety of interests and generally lives a well-balanced life of work, rest and recreation. He has the ability to get enjoyment and satisfaction out of his daily routine job. According to Fromm, 'a mentally healthy person has developed a zest of living that includes a desire for activity which is reflected in an attitude of utilising whatever potentialities he possesses, in productive forms of behaviour (10).

Foundations of Mental Health

By foundations of mental health we mean a few basic factors on which mental health of any individual depends. These factors are as follows:

- (a) hereditary factors,
- (b) physical factors
- (c) fundamental social forces such as the home, the school, the neighbourhood and the community,
- (d) the satisfaction of basic needs in the period of childhood.

(a) *Heredity*—It provides the raw material, or the potentialities of the individual. It sets the limits for his mental health. What the individual inherits is the potentialities in relation to growth, appearance, intelligence and the like. The development and utilisation of these potentialities is determined to a large extent, by the environmental opportunities. Investigations have shown that heredity may predispose a person to the development of a particular type of mental illness when he is placed under excessive stress. Even in psychoneuroses and psychopathic personality trends, hereditary factors play some role. In feeble-minded men hereditary factors are quite prominent. In the words of Wallin, 'defective heredity may furnish a fertile soil for the development of mental and nervous diseases but so far as minor personality maladjustments are concerned, heredity supplies only a predisposing condition,' (24).

(b) *Physical Factors*—Physical health factors make a significant contribution to mental health. An erect posture, a winning smile, colour in the cheeks, a feeling of exhilaration promote a sense of personal security and have a marked influence on other people. People with greater strength, better looks and robust health enjoy a social advantage in the development of personality characteristics. An individual with a feeling of physical wellbeing ordinarily enjoys a good disposition and is enthusiastic and intellectually alert. He has a desire to live, to achieve and to be happy. Nobody can deny that physical health improves mental alertness inasmuch as it increases motivation and drive. It has been observed that continued hunger, overwork or sleeplessness produce fatigue, which may affect mental health adversely. Sick people find it more difficult to make adjustments to new situations than healthy people. Vitamin deficiencies have been found to be the causative factors in many personality difficulties. In pernicious anaemia, for example, there occurs a deficiency of red corpuscles and this produces characteristic symptoms of apathy, irritability, depression and anxiety.

Again persons suffering from serious physical defects may have problems of adjustment on account of inferiority feelings which they have not been able to deal with adequately. Positively speaking, the individual who follows a hygienic regimen, pertaining to food, drink, elimination, bathing, physical activity, work, sleep, rest, relaxation, prevention of disease and correction of defects, is more likely to have good mental health.

(c) *Social Factors*—Social factors pertain to the society in which the individual lives, the interactional processes and his social functioning with other persons. It is the social environment which shapes the knowledge, the skills, interests, attitudes, habits, values and goals that he acquires. Every individual is born into a society which influences the content of his behaviour.

Of the social factors, the most important are the home, the school and the community. A mother who gives affection and security to her children contributes to their mental health, whereas a mother who is nervous, tense, or self-centred, over-protective or rejecting, domineering or inconsistent in disciplinary practices or who is partial in dealing with her children is laying the foundations of mental inadequacy or ill health. On the other hand, a father who shares his life and time with his family and children, who shows interest in the development of his children, plays with them or works with them, helps them to develop mentally healthy attitudes.

Broken homes or unstable homes where parents are in constant conflict produce a large percentage of children with adjustment problems. A good home, on the other hand, where there is a harmonious relationship between parents, where parents understand the needs and interests of their children and where there is an atmosphere of happiness and freedom, contributes greatly to the mental health of every member.

The school, too can 'develop a sense of personal worth, social growth and social competence,' if its experiences are satisfying and if they evoke affectional responses. A good school provides an atmosphere in which each pupil is respected as an individual. It provides a curriculum enriched by activities, meeting the needs and interests of pupils—co-curricular activities such as dramatics, athletics, debates which promote the physical and emotional development of its pupils. Such a school is a positive factor in the development of sound mental health.

The Community—Mckinney remarks, 'The community furnishes the framework and climate within which the family lives and develops; it must, therefore provide a healthy atmosphere and a well-organised network of public and community services of the highest possible quality.' (17) These services will satisfy such needs as those of love and affection, give a feeling of belongingness, provide opportunities for group participation and for emotional release. Education of the general public, through libraries, reading rooms, social education centres, a well-rounded recreational programme, vocational guidance bureaus for youth, Bal Bhavans, hospitals for the mentally and physically ill, arrangements for family counselling, maternity and child welfare centres in the urban and rural areas, and the like are some of these desirable services.

(d) *Satisfaction of Fundamental or Basic Needs*—From the discussion of the physical and social factors it will be clear that mental health in childhood and later depends very much on the adequate satisfaction of our fundamental or basic needs. It has been brought out by mental hygiene specialists again and again that when these needs are adequately cared for, the individual functions in an effective manner.

Our basic needs are organic as well as emotional or psychological. The organic needs are to be satisfied for maintaining physical well-being. 'Hunger, thirst, fatigue, lack of sleep, physical pain, exercise, heat or cold and the like set up certain tensions in the individual which must be relieved.'

Psychological or emotional needs are also called ego-needs which must be satisfied to maintain 'self'. They are as important as the organic needs. There are two main ego-needs. Firstly, we have the need for a sense of security through the love and affection of those who are important to us—our parents, our friends and our fellow men. We wish to have a warm and satisfying relationship with other people. This feeling of security mostly comes through love which consists of such elements as understanding, trust, co-operation and overt affection. The child feels secure when he is assured that his parents care for him, want him and accept him as he is. Accepted in this way the child can establish healthy relationship with the world outside. To the person with a feeling of security, the world is a friendly and safe place. Such a person likes people and feels comfortable with them. The second ego-need is for recognition or regard as a person of worth and importance. The adequate satisfaction of this need gives a sense of adequacy, a feeling of self-enhancement. In order that this need is satisfied in the child, parents and others have to demonstrate their affection and their approval and evince interest in what the child does. Once the child has a feeling of adequacy and importance, he will be able to cope with and solve the problem which confronts him. Other needs besides these two which should be satisfied, are the need to grow independently, the need to play and the need to belong to a group. The need to grow independently is often not properly satisfied in our homes. Our parents are mostly over-protective or over-restrictive. They find satisfaction in the children remaining dependent on them for ever. Generally, the youngsters are not allowed to think and decide for themselves.

Frustration and Mental Conflict

Human beings are trying to fulfil their needs in order to live happily and function effectively, but these needs cannot always be adequately satisfied on account of several obstacles and obstructions. These obstructions cause frustration and produce tension. Continuous frustrations of our basic needs may lead to serious maladjustments or conditions of mental ill-health (9).

Our frustrations may be caused by minor obstacles in the environment, by conflicts with other people, by environmental situations beyond our control, by economic deprivation, by social customs, traditions and taboos, by the exaggeration of our personal deficiencies and by conflicts of motives within ourselves.

Frustration, however, is a necessary experience in the life of any child and adult, a necessary accompaniment of the processes of growing up. It can stimulate greater efforts at productivity and creativity, if it is not in excess and if we have developed the ability to tolerate frustration. This ability is called 'frustration tolerance'. Reviewing the frustrating situation, modifying our goals, substituting by others which are equally satisfying though different but obtainable, can save us from the painfulness of being thwarted.

Frustrating situations involve an element of mental conflict, the conflict between various opposing desires and impulses in the individual. The conflict makes decision difficult. Actually the mental state of indecision implies a mental conflict. Conflicts may be between one person and another or between a person and his environment. But the most dangerous and serious conflict is within a person. This is called the internal conflict, the conflict between one's motives, desires, sentiments and attitudes. Freud describes it as the conflict between the forces of the Id, the Ego and the Super-Ego—the three dynamic aspects of one's personality (9).

The internal conflict may be conscious or unconscious. We are aware of its causes or sources when it is at the conscious level; whereas, we are not aware of the real motives causing the conflict at the unconscious level. The conflict at the unconscious level is responsible for many of our emotional disorders and mental ill-health.

Defence or Adjustment Mechanisms

We have seen that certain situations or factors interfere with the smooth development of the individual and cause severe emotional conflicts and frustrations. These conflicts and frustrations threaten the individual's psychological balance. But the human individual is equipped with mental capacities to protect himself against such psychological dangers, as much as his body is equipped with powers to protect against physical dangers or distress.

We all know that at the base of the brain is situated a heat-regulating centre. This centre maintains the temperature of the body. When the weather is cold this centre causes the blood vessels in the skin to contract, thereby permitting less blood near the surface of the body to cool. When the weather is hot, these blood vessels dilate, thus causing more blood to come to the surface of the body, where it can cool off more rapidly. Evaporation of water from the skin also aids in cooling the body. Also located in the body is a vomiting mechanism which causes the stomach automatically to empty itself of poisonous or other injurious substances which are eaten. There is, in addition, a defence mechanism which tends to

protect the body from bacterial infection. The body's defence against such agents are the white blood cells called 'Leukocytes.' These cells automatically check the invading organisms by destroying them and neutralising the effects of their toxins (15).

This is how the body protects against physical danger or distress. Similarly the individual has devices for protecting himself against psychological dangers and distress. These protective devices are known as 'ego defences' or 'defence mechanisms' or mental mechanisms or dynamisms. They are protective in that they help the individual in overcoming threats to his ego. They reduce the distress caused by frustrations and conflicts. They soften one's failure, preserve inner harmony and enable the individual to make adaptation to distressing experiences. There are a few specific types of responses which make us feel better, which we use in maintaining our self-respect or prestige that is being threatened by our frustrations or obstacles which we cannot overcome. When these mechanisms operate, the indication is that we are facing some problem of adjustment or that some motives have been thwarted and that we are trying to discover some way to solve our problem and to relieve our tensions.

We may make a variety of adjustments in our attempt to solve the problem or to lessen our tension. Let us take an example. A student is having serious difficulty with science subjects. He is not faring well in them. How differently can he respond to this problem situation? He may study very hard early each morning and after the college is over. He may comfort himself by believing or pretending to believe that sciences are not important. He may cultivate the friendship of the best student in science and without working hard, may bask in the latter's reflected glory. He may even blame the lecturer for not being able to teach well or to arouse his interest in the subject. He may satisfy himself by talking about other students or class-mates who also are having difficulty in sciences. He may whine or may be content to have others sympathise with him. He may fall ill or feel sick and thus may cut classes and tests. Or, he may day-dream that he is the best student in the sciences in his class.

Psychologists are not agreed on how to classify or label the mechanisms of adjustment. We do not propose to discuss here the various standpoints or angles from which classification can be or has been made. We shall simply discuss some of the important mechanisms which operate in our daily life. These include compensation, rationalisation, projection, identification, substitution and sublimation, repression, regression, negativism, sympathism, withdrawal and day-dreaming or phantasy.

(i) *Compensation*.—When an individual makes an attempt to make up for a deficiency by directing his energies to some other aspect of his personality in which no deficiency exists, he is using

the mechanism of compensation. The individual tries to overcome a failure or deficiency in one area through achieving recognition in another area, and, is thus able to enhance his self-esteem which has been threatened. For example, an academically poor student may work hard and may show his abilities in dramatics, or a person with a physical handicap may strive hard to excel in his studies.

The compensatory reaction may work in another way too. The individual may work hard in the area in which he is deficient and may overcome his defect or weakness to the astonishment of others. A boy, for example, with weak muscles and short stature, may work hard to become a prominent athlete. Or, a youngman who has difficulty in learning to play an instrument may practise so hard that he may become the best instrumentalist of his town. Demosthenes, one of the greatest orators of all times, was a stutterer, but he overcame his defect by hard-work and determination and became the greatest orator in Greece. All these examples illustrate 'over-compensation.'

Sometimes, the compensatory behaviour may be socially harmful. A boy who is physically weak and deficient may turn into a bully and may select boys who are weaker than him and maltreat them.

(ii) *Rationalisation*.—It is one of the most popular mechanisms. The individual who has been frustrated or who cannot solve the problem successfully and consequently feels discomfort and restless, tries to lessen his feelings of anxiety and guilt by using this device. He behaves and reacts in a certain way in response to frustration and instead of justifying his actions by real and true reasons, gives other than true and real reasons. In other words, he offers plausible reasons rather than actual reasons which prompted his behaviour. He does not offer the actual reasons because they are too painful to acknowledge. Actual reasons are not flattering to our sense of self-importance. Often students postpone work on a difficult assignment in favour of some other less important work and the reason given is: 'This is to be done immediately—It is needed first.' If we cannot do a job well or successfully, we often satisfy ourselves by saying, 'It does not pay to work hard on this job'. A student who does not know how to play badminton well, may not participate in the games, and may justify his non-participation by saying, 'I do not want to play badminton—It is not any fun...I could play if I wanted to, but I do not want to.' A strict and vindictively minded parent may justify his 'disproportionate punishment' or 'excessive severity' towards his children on the grounds of his so-called belief that it is the only way to train a child properly. Thus rationalisation often takes the form of justification or excuse-making.

Rationalisation takes a special form, called the sour-grapes-mechanism. We often insist that the things we cannot achieve are not

worth having. A student who has failed in an examination twice or thrice may argue, 'Only crammers can pass such an examination.' If we go to the pictures when we should be studying, we rationalise, 'After all, recreation is as important as study itself in one's life.'

Another form that rationalisation takes is known as the sweet lemon mechanism, which is the opposite of 'sour-grapes mechanism.' A person may lose a big fortune. It is a severe blow to him, but the blow may be so tened by the rationalisation that now he can enjoy the simpler and more important and enduring things in life which he formerly overlooked. A house-wife who lives in a small house because of limited financial reasons (which are the actual reasons), may extol the virtues of small houses and may say that they are cosier and more comfortable.

The difficulty with the use of this mechanism, as with others, is that we are not aware that we are distorting facts or deceiving ourselves. We may use this mechanism so much that we may lose contact with actual reasons for our behaviour and reactions, and, therefore, develop wrong perceptions.

(iii) *Projection*.—We often attribute to others our own short-comings, desires or moral defects as a means of lessening our own sense of guilt or inadequacy. We may have certain failings and undesirable behaviour traits or motives and feel inadequate but instead of acknowledging them, we call attention to the same traits in others. Thus we deflect attention of others from our own short-comings. A person who is untruthful may accuse others of telling falsehoods. A student who has cheated in an examination may satisfy himself by saying that others also have cheated. Or, a student who is criticised for poor work in the class by his teacher may retaliate by finding many weaknesses or faults in the latter. It has been observed that people who are most critical are often projecting their own short-comings on others. Thus when we tend to blame other people for failures for which we should ourselves assume primary responsibility, we are projecting. In this way, we may gain some release of emotional tension. But the excessive and continuous use of this mechanism may lead to difficulties: we may fail to see our own failures and weaknesses and this may bring about a feeling of being persecuted.

A special form of projection is called displacement or transference. A student has been reprimanded or scolded by the class teacher for negligence of duty. He feels very angry about it but instead of directing his anger on himself, he may give vent to his aggressive feelings on another student, who did nothing to call for such feelings.

(iv) *Identification*.—'It is an adjustment mechanism which enables one to achieve satisfaction from the successes of other people, groups or organisations' (7). Boys often identify themselves

with their fathers, or father substitutes and girls with their mothers. A business-man who has not yet achieved success in business may identify himself with a well-known and well established businessman. Students often identify themselves with their favourite teachers and try to modify their behaviour in accordance with that of the latter. When we do not possess certain qualities and cannot achieve certain ambitions, we seem to acquire these qualities and achieve these ambitions vicariously by identifying ourselves with a person who possesses those qualities and who has succeeded in achieving those ambitions.

Hero worshipping is a form of identification. As we grow, we begin to identify ourselves with our schools, colleges, organisations, and clubs. When we do so, we believe that we are partly responsible for the accomplishments of the group. This belief bolsters our morale and provides us with at least a temporary sense of adequacy. Again, it is because of identification that we adopt the mannerisms and habits of our favourite artists, teachers, friends and filmstars, in dress, in speech and other styles of living. This identification can operate as a desirable defence mechanism, but if it is unduly practised, we may tend only to bask in the reflected glory of others and make no effort of our own to achieve success and glory.

Identification can be a source of danger in another way also. Vicarious satisfactions and vicarious experiences may take the place of real life experiences and real satisfactions. Moreover, if we assume the attitudes or behaviour characteristics of another person with whom we identify again and again, the danger is that we may, thereby, lose our own identity.

(v) *Substitution* is an adjustive mechanism in which the original goals or desires are substituted by others. The original goals are difficult to achieve and an attempt at achieving them may end in failure. The individual tries to evade this failure or to lessen the effects of actual failure, by selecting a new goal or a new situation which is easier to attain. A student who has not been accepted for admission by a medical school may satisfy himself by becoming a nurse. A man may desire to become the manager of a big industrial firm but may fail to become one on account of various reasons, personal and environmental. This failure may cause a great deal of frustration or tension. He may, subsequently, reduce his tension by becoming the manager of a small business concern. Or, a boy who cannot go to the medical college for lack of funds may take an evening course in X-ray technology.

(vi) *Sublimation*—It is a form of the mechanism of substitution in which our unacceptable desires or activities are redirected into socially desirable channels. For example, we cannot give direct expression to our sexual, maternal or aggressive impulses due to many social restrictions, laws and regulations. These impulses have

to be repressed and the energy associated with them may produce tension and personal maladjustments. Sublimation consists in draining off the thwarted energy into socially approved channels. An unmarried woman interested in children may give expression to her repressed maternal urge by engaging herself in orphanage work or in any child welfare institution. Similarly, sexual impulses when they are denied direct satisfaction, may be redirected into useful artistic and literary pursuits. A businessman who has been angry over certain events of the day may redirect his energy into games, gardening or any other manual work. He thus channels his tension into a more desirable form of behaviour.

By redirection of the impulses, the individual not only gives expression to his impulses in socially desirable channels, but also gets personal satisfaction. Society gains by these redirections. Great works of art, music, science and literature, are often described as the sublimated out-pourings of our primitive impulses. It is said about Dante that while walking in the streets of Florence, he saw and immediately fell in love with a young girl named Beatrice. Dante could not marry her as she belonged to a higher social class. He never spoke to her, and saw her only once for a few minutes. But this denial of his desires or frustration served as the basis for several volumes of sublime poetry.

It must be noted, however, that sublimation becomes possible only if the training and education have been good, and facilities for sublimation along with the suitable potentialities are present.

(vii) *Repression*—Freud describes it as a primary mechanism in which our strong emotional ideas and unpleasant memories which do not fit in with our social values and norms, are split off from consciousness and thrown into the unconscious. In other words, it is a process of unconscious forgetfulness of our unpleasant and conflict-producing emotions and desires. If these experiences and ideas were to remain in the conscious, they would cause a person to feel ashamed, guilty and unworthy. The 'ego,' thus, protects itself from anxiety by forcing into the unconscious those experiences which have been distasteful and which threaten the emotional well-being of a person. Of course, once an idea or a desire has been forced out of consciousness or repressed, it does not mean that it has been completely banished or forgotten. This or similar repressed ideas or desires may cause a conflict in the unconscious, and may colour even our overt behaviour in some way or the other.

It must be remembered that when we cast a discomfiting idea or desire deliberately out of our mind or field of attention, we call it suppression, but when this process takes place unconsciously, we call it repression. A group of repressed desires and ideas strongly emotionally toned forms a complex.

(viii) *Regression*—Some people do not meet the problems of life, its strain and stress, in a mature way. They revert or retreat to an infantile or childish level of behaviour, and thus avoid the painfulness of suffering a conflict or tension. This mode of behaviour is called regression. It always implies a form of behaviour which is less mature than what is expected of the individual. By regressing to a less mature level of living or behaving, the individual will not be expected to meet the demands of such situations as he is now facing. The behaviour or device which the individual resorts to had proved successful in meeting a less difficult situation in the past. For example, a student may fall ill just to avoid such frustrating situations as examinations or appearances before a group. He may suffer from stomach trouble or vague aches or headache. These modes of behaviour save the student from facing the real problems. A five year old child may regress when a new sibling is born, and he feels neglected, unloved and depressed. Feeling insecure, he may resort to behaviour patterns of earlier years. He may start bed-wetting or he may find difficulty in feeding himself. Another example may be of a nurse who is not making adequate progress in learning the arts and skills of nursing. Instead of putting in more effort which is expected of her in this situation, she may resort to crying whenever she has to solve or write out a difficult assignment.

It is true that the occasional use of the mechanism may do no harm to one's personality, but constantly retreating from one's problems by living in the past or resorting to childish patterns of thought and behaviour, constitutes a serious danger to personality development. Such a person may remain highly dependent, indecisive and afraid of change or new ventures.

(ix) *Negativism*—Some individuals react to frustrating situations by becoming negative. This means they refuse to attack the problem or obstacle which confronts them. Instead, they become contradictory, stubborn and rebellious. They become un-cooperative and do the opposite of that which should be done. Children who are treated unfairly and discriminately, who are discouraged, who are pampered too much, are likely to develop un-cooperative and negativistic behaviour. Disobedience, temper tantrums and defiance are expressions of their negativism.

(x) *Sympathism*.—In sympathism, the individual avoids the necessity of solving his problems by obtaining the sympathy of others. Many persons get contented if they can turn to someone for sympathy. They try to gain attention and secure expression of concern over their difficulties. For example, a student is not doing well in her studies. Instead of finding out the cause realistically and making an effort to improve herself she may be satisfied with other's sympathy which she may evoke by telling them how difficult things are for her, how her family is in great trouble, and how unlucky she is.

(xi) *Withdrawal*.—Some people tend to withdraw from the situation in which they experience difficulty. They do everything in their power to keep from having to face psychologically dangerous situations. Social obligations threaten them. Failure and criticism make them timid and seclusive or retiring. They fear failure so much that they avoid coping with their responsibilities. Their reason is very simple. If they refuse to face their problems, there is no danger of failure in connection with them.

A student who is afraid of achieving success in social relationships may shun the company of other students. He may remain at home or by himself and may refuse to participate in sports or social games. Instead of trying to increase his efficiency in the field of social relationships, he is withdrawing from the problem. 'By attempting to remain obscure, the individual hopes to protect the integrity of the ego.'

(xii) *Fantasy or Day-dreaming*.—Day dreaming is a kind of withdrawal. Many of us resort to it when we are face to face with real problems. Instead of attempting to solve these problems in a realistic manner, we withdraw ourselves into a world of phantasy where we need not face failures, where we succeed in every undertaking of ours. Thus we retire to a make-believe world where everything is possible, where we are able to overcome all obstacles in the realisation of our desires, where we are victors or conquerors and where we are able to fulfil our ambitions which have been thwarted in the objective world of reality.

Daydreaming is pleasant. It may help us to escape from the disagreeableness of everyday life. It may help us to relax and gain a new perspective on things. The plans that we make in phantasy may, sometimes, push us on the greater effort in the real world. Realising the need for mental escape, the modern world has provided a number of ready-made phantasy worlds for people to use, such as the movie, the radio, novels and plays. But the dangers of excessive daydreaming are much greater than the advantages. A habit of daydreaming may accustom us to this so much that phantasy life might become more desirable, more sought after, than real life. We may become satisfied with unreal, imaginary success in life. Excessive daydreaming may result in the loss of contact with hard facts of life and may lead to a psychotic disorder called schizophrenia.

Besides these, there are other adjustment mechanisms such as dissociation, ego-centricism, reaction-formation and others.

Complexity and Utility of Adjustive Reactions

Although, we have classified the mechanisms of adjustment, it should be noted that actual human behaviour cannot be simplified in this manner. We react to tensions and frustrating situations in a complex way. We may employ several mechanisms simultaneously.

Our behaviour, in general, represents an overlapping or interaction of various adjustment mechanisms. Kaplan and Baron (14) narrate an anecdote about one Mrs. Thames who had never enjoyed much social life as a girl. But when her daughter Jane began to grow up, she started taking an increasing interest in the girl's social life. Jane was encouraged to bring her friends home and the mother would try to be a part of the group. 'She entered into their activities, acting much younger than her years.' This anecdote shows how 'Mrs. Thomas was compensating for her earlier social frustrations by regressing to an earlier stage of life. At the same time she was identifying with Jane and sharing her daughter's success and happiness.' Thus these mechanisms are not mutually exclusive nor do they generally operate as relatively separate entities.

Another point to be remembered about these mechanisms is that they usually represent unconscious attempts on the part of an individual to solve his problems and to 'preserve the integrity of his personality. They enable him to present an appearance of being successful and thus help him in maintaining his sense of personal worth. Both well-adjusted and maladjusted people make use of these defence mechanisms but while the former use them sparingly and appropriately, the latter use them frequently and in socially undesirable channels. They use them to protect themselves from the major threats as well as the minor ones. The psychoneurotic or the psychotic individual depends on them constantly.

Meaning and Purposes of Mental Hygiene

We have seen, in the foregoing sections, how adjustment mechanisms serve the useful function of enabling the individual to relieve his tensions which are produced by conflicts and frustrations. They assist him in overcoming threats to his ego and maintain his psychic balance. But if these mechanisms are used again and again, there is a likelihood of our personality undergoing a gradual change for the worse, leading to a persistent state of maladjustment or some forms of mental illness or mental disorders such as psychoneuroses and psychoses with a variety of attending symptoms. Many of these people can be saved from developing these symptoms if they have a knowledge of certain principles which, if practised correctly, will save them from developing mental illnesses or suffer from maladjustments. In other words, these principles will help individuals retain their emotional balance.

Mental Hygiene deals with these principles of living which would serve as a guide to human adjustments. It consists of 'those patterns of living which promote the development of wholesome and socially adequate personalities.' These patterns of living help an individual to get along with himself and with his fellowmen, to cultivate desirable attitudes, to avoid conflicts that bring about maladjustments, and pursue intelligent, rational behaviour.

Mental hygiene is an organised attempt to effect human adjustment through the application of these few principles and practices. It has three major purposes. They are, in the words of Crow and Crow (i) the prevention of mental disorders through an understanding of the relationship that exists between wholesome personality development and life (ii) the preservation of the mental health of the individual and of the group; and (iii) the discovery and utilisation of therapeutic measures to cure mental illness. Thus there are three approaches in mental hygiene; (a) the preventive approach to adjustment problems (b) the therapeutic and preservative approach and (c) the curative approach (6).

The most modern approach is the *preventive approach*. It has been adopted from the field of public health. "It is based on the principle that the best way to ensure well-adjusted individuals is to surround them with environmental influences which will enable each person to develop his full potentialities, to attain emotional stability, and to achieve personal and social adequacy." (14) Preventive mental hygiene begins in the home, and its principles are important even in school and other areas.

Having discussed the concepts of mental health and mental hygiene, of frustration and mental conflict and having considered the concept of mental-hygiene approach to education, we are in a position now to see what and how educational principles and practices can subserve the goals of mental health, both for teachers and students.

II Mental Health of the Classroom Teacher

The basic personality pattern of the teacher, his training and attitudes are an important factor in building an emotionally healthful classroom environment that promotes the mental health of school children. How well the school succeeds in promoting the mental health of children depends upon what teachers do to and for children in the course of their daily classroom life. The latter is determined partly by their personal qualities and partly by their attitudes towards their profession.

Personal Characteristics of Mentally Healthy Teachers

Research workers in education as well as persons interested in teacher-training and in-service programmes have sought for many years to identify the characteristics of an effective teacher who contributes to the mental health of his students and his own. Some of these personal characteristics are as follows :-

1. alertness, enthusiasm and interest in pupils and classroom activities,
2. the ability to maintain natural and pleasant person-to-person relationships, cordiality and friendliness,

3. recognition of one's own mistakes,
4. patience, kindness, sympathy, sincerity, fairness in dealing with pupils,
5. democracy and courtesy in relations with pupils,
6. the ability to use praise for work well done,
7. the ability to help pupils with personal as well as educational problems,
8. pleasing personal appearance and manner,
9. good disposition and consistent behaviour,
10. flexibility in opinion, beliefs and attitudes,
11. a good sense of humour—the ability to enjoy a good joke.
12. physical fitness and good health status.
13. wide interests—interest in games, sports, dramatics and other socio-cultural activities.

Some of the undesirable personal traits mentioned in various studies made are bad temper, intolerance, unfairness and inclination to have favourites, unreasonableness in demands, tendency to be gloomy and unfriendly, sarcasm and inclination to use ridicule, unattractive appearance, impatience and inflexibility, tendency to talk excessively and to talk down to pupils, overbearing and conceited manner, lack of a sense of humour, apathy, rigidity of procedure and overfastidiousness and perfectionistic attitudes.

Professional Traits of a Mentally Healthy Teacher

Besides these personal traits, there are certain professional traits and attitudes which are conducive to the mental health goals in education.

These are as follows :-

- (a) good knowledge of subject matter in which he has specialised,
- (b) capacity and willingness to teach effectively and mastery of communication skills,
- (c) ability and desire to improve professional skills and achieve competence through the study of professional books and magazines.
- (d) ability to work together, to share experiences with others i.e. other staff members,
- (e) ability to assume an attitude of individual responsibility and cooperative functioning,
- (f) acceptance and understanding of children,
- (g) realistic perception of the social expectations and an understanding of his social role,
- (h) respect for oneself and one's profession.

The last point needs a little elucidation. It is important that teachers take as optimistic view of their profession as possible. Merely blaming one's salary, the community, the employers, the supervisors, or the overcrowded classes, amounts to a negative attitude towards the profession. The negative attitude has to be replaced by a positive one and this is possible if, instead of dwelling upon and magnifying the disadvantages of teaching, we were to concentrate on some of the positive values of the profession. Then alone, could we derive satisfaction from teaching—the reward that comes from the warm interplay of human personalities, the reward from what we give to children, what we make of them, from the feeling that we are building up a society or a social order by what we say or do or feel. We can derive satisfactions only if we are prepared to meet the frustrations realistically, to consider the feasibility of remedial action and to place the frustration in its proper perspective. The positive attitude implies review, criticism and evaluation of the advantages of the teaching profession in terms of opportunities for professional achievement, intellectual stimulation, personal satisfaction, reasonable hours of work, contact with the enthusiasm of youth, and association with professional co-workers.

There are certain handicaps which have to be removed by administrators, social reformers, the society and the teachers themselves in order to ensure their mental health. These are the personality factors or difficulties resulting from biological or early environmental influences, insufficient preparation for teaching, lack of mastery of the materials taught, unhygienic supervision, insufficient salary and economic difficulties in terms of uncertain tenure, overcrowded classes, poor physical health, undesirable community attitudes amounting to lack of status and appreciation, and greater attention to minor details rather than to main aims of education, as demanded by the educational system.

In view of these "possible hazards", stress is being laid on better student-teacher selection, training and education. With the growing recognition of wholesome personality and mental health as basic in the task of education, it becomes imperative that these qualities be taken into account in a significant way in the selection of students to the training colleges. Townsend says, "Only by preventing the admission into the profession of those temperamentally unqualified to teach, can the basic prestige of the profession be built up to a place where it can alter the public feeling of contempt or irritation against so basic a social function as education" (22). Mere "credit gatherers" or those who are *merely scholastically high* won't be suitable candidates. Persons who are lonely, who are in need of friendship, who are victims of worries, emotional up-sets, and defects of immaturity or uncongenial home surroundings, who have no strong motivation are most clearly unsuited to the work of modern teaching. We have already enumerated the teacher-qualities that are desirable, and those which are undesirable from the point of view of mental health of students.

To ensure mental health in and through education, teacher education programmes should be designed to assist prospective teachers to develop the following competencies:—

- (a) a knowledge of the the nature and developmental behaviour of human beings,
- (b) an understanding of the community life. The teacher is a social scientist, hence the emphasis on understanding of the community and social change,
- (c) a meaningful interpretation of the ideas and values inherent in democracy,
- (d) "a comprehension of the complexity of the teaching-learning process,
- (e) an appreciation of our cultural heritage,
- (f) a faith in internationalism on account of the increasing impact of air transportation and mass media. It is a faith which is necessary for living in a global world—an understanding of the increasing interdependence among the nations of the world,
- (g) an understanding and appreciation of the humanities (literature, art, music, history and philosophy)
- (h) an understanding of the moral values and ethics of the profession,

The curriculum in teacher-training colleges should be framed with a view to developing these competencies.

Again measures should be taken to help teachers now in service to grow in such ways as to make more certain that the children in their care will be mentally healthy. Each school needs to find ways through which the present staff may be stimulated and aided in their own growth process. Experience has shown that apart from other ways, two important factors that have high potential influence on the teacher's growth are firstly the way the teacher himself is treated as a person, and secondly the way he is influenced by persons whom the teacher admires and likes. According to Rankin "the teacher who feels secure in his job, who receives the recognition and praise due to him from his superiors, who feels himself justly treated, who feels that he belongs to and is accepted by the group of which he is a member—such a teacher is predisposed toward continuing growth in his own mental health and in his ability to affect for the good, the mental health of the children he teaches" (8).

Other factors that contribute to the growth process are congenial working conditions, the chances for co-operative educational planning with the administrators, provision of means through which teachers may gain greater understanding of children generally and greater ability to learn to know particular children, making available to the teacher resources to help him with children who have more

serious problems *e. g.* psychiatric social work, child guidance clinic services, setting up a personal consultation service for use by teachers to help them with their own personal problems and a system of conferences, teachers' meetings and institute for better knowledge of mental health in and through education.

It is high time that teachers are treated by society as ordinary human beings with human failings and foibles rather than as paragons of ascetic living, not as strangers and "transients" but as an integral part of the community. The stereotype of a teacher, as at present, is a source of great strain. He is a pedagogue, a pedant, a "master ji"—mild connotations of opprobrium. This stereotype has to be replaced by a new, dynamic and realistic one.

III. Mental Health of Students

The problem of mental health of school-going children is rooted in needs and their satisfaction. If conditions in the school are such as to satisfy their fundamental emotional and social needs, they will not experience difficulty in adjusting to their physical and social environment and will grow into mentally healthy adults later in life. These are needs for security, for manipulation and satisfaction of curiosity, for expanding cultural and social contacts, for a sense of recognition and achievement, for acceptance and approval. There are certain principles of mental hygiene which should be practised by teachers to ensure the mental health of school going children in various stages of growth.

During the early school period which ranges from 6 to 12 years, it is important for teachers to see that the child gets affection and recognition. He needs to feel that he belongs to the school and the school belongs to him. It is necessary that the atmosphere in the school, as in the home, is that of love and understanding, free from favouritism and invidious comparisons. During the early years, the child needs to gain control of his developing body and therefore, requires constant physical care and attention. He needs opportunities to exercise his muscles and to refine his motor-coordination. For realising this, he must be provided with games and other play activities with other children.

The child goes to the school from the protective environment of the home. There he is exposed to new people, to new ideas, to new experiences of being one of the group. He has to adapt himself to a new adult authority—the authority of the teacher. If teachers are sympathetic and encouraging and they understand his needs, if their discipline is not too rigid and harsh, if they allow children to behave like children rather than as young adults, if the school provides a number of interesting group activities instead of negative rules, adaptations which the child has to make will be facilitated and no complications will arise.

Teachers should note the individual differences among children and respect these differences. Respect for individual differences implies different demands and expectations from different children. It also implies that the schooling of the child should proceed at the same speed as his capacity for assimilating it. If the instruction is too fast, he will become frustrated and discouraged, and if it is too slow, he will become bored and impatient. Both these conditions may lead to dislike of the school, truancy and class-room disturbances. Hence, the desirability of using individual and group methods in teaching as against class methods.

Provision in the school for emotional expansion and self-expression through activities such as dramatics, art and painting, handicrafts and games, and not only of activities which are purely academic and intellectual, is highly desirable. Repressive behaviour on the part of teachers, their sarcastic remarks, ridicule and threats will create emotional tension that may manifest itself in withdrawing responses, unsociability or unhappiness.

Teachers, like parents, should realise the importance of friendships in the later part of this period. Students have their groups and gangs; they have loyalties to these groups and these come in conflict with loyalties to the home and to the school. This means children may frequently disobey their teachers and parents because of this conflict. This desire for group-making can be utilised through the formation of cubs, scouts and girl guides and other clubs.

Attempts should be made by teachers to see that the child does not develop strong feelings of inferiority. Let him be occupied with activities which give him a feeling of worthwhileness and a sense of achievement and success. Let not the child's attention be fixed on his limitations, his failure and handicaps alone.

Adolescence—The next growth period adolescence, begins at the end of the childhood and closes at the beginning of adulthood. It ranges from thirteen to eighteen or may extend even up to twenty. It is a period of transition from childhood to maturity—a 'between age'. An adolescent is no longer a child and yet not a man. Being in a period of transition, he has problems peculiar to transition—the problems of having lost an established and accustomed status he has not yet acquired the new status towards which the factors impelling developmental changes are driving him. In other words, he has the transitional difficulties of insecurity, disorientation, and anxiety.

Adolescence is a period of rapid physical, intellectual, emotional and social growth—a period of growing up. Physically the boy or girl becomes an adult; sex¹ organs mature. There is intellectual growth towards a more abstract and mature mode of thinking. Intelligence reaches its maximum. Emotionally, the adolescent grows independent of parents and prepares himself for entering into other relationships that are needed in marriage, in work

and in the community. Sex consciousness develops and this influences the emotional as well as the intellectual activities of the individual. Biological changes lead to moods, confusions and worries of all types.

Mental Hygiene in adolescence is intimately related to an understanding and satisfaction of the special needs of the adolescent besides some physical and emotional needs that he or she has in common with children and adults. Firstly, the adolescent has a need for status. He wants to be important, to have a standing in his group and to be recognised as a person of worth. He wants to achieve adult status and status in his peer group. Secondly the adolescent has a need for independence. He craves to achieve personal independence and to wean himself away from parental attachments and restrictions. He wants to feel and act like a grown-up. He desires to run his own life. He wants to take on responsibility that is in line with his increased abilities and maturity level. Thirdly, the adolescent needs a satisfying philosophy of life. He is concerned with questions of truth, religion, the meaning and goals of life and 'ideals'. Fourthly, the adolescent needs a proper orientation to the opposite sex and attention to the fact that he now has sex impulses and curiosities which have a great force. Lastly, the adolescent needs guidance in selecting a vocation or in preparing himself for a vocation.

Keeping in mind these special needs and growth characteristics, the following suggestions are pertinent to the maintenance of mental health in this period.

- (a) Both teachers and parents should help the adolescent to accept his body with all the changes and instabilities. He has to accept the growth of his body which is not very uniform. He has to be told that his hands, feet, nose or ears may grow big out of proportion to his body. If he is not helped in regard to this, he may develop self-consciousness and reserve which is dangerous. Help can be rendered by providing suitable games and exercises in school and by providing sufficient rest, sleep and good diet in the home. Of course, we should not point out any physical abnormalities in a light-hearted manner. Again, the adolescent should be reassured that sexual sensations are normal and there is nothing nasty or sinful about them. Sex education, given in a scientific and objective manner, emphasizing the values of healthy sex life will be a great help to him.
- (b) Emotional emancipation from parents is essential for proper growth towards adulthood. It is difficult for both parents and adolescent boys and girls. A part of the youngman still wants to be a baby, another part wants to be a man. One part wants security and protection, another

part wants adventure, freedom and independence. Parents find it difficult to lose hold of their children. This desire for independence on the part of the adolescents is shown in going contrary to rules and regulations and the usual schedules, and in disagreements and differences of views and opinions. It is wise to let the adolescents have a feeling that they can do things now by themselves and that they can differ from parents and teachers, but in spite of these differences and their urge to be independent, they should feel assured that they can bank upon friendliness, love and affection. Both parents and teachers should allow them to make their own decisions and choices to the degree that they are capable of making. In school, they can be encouraged to participate in all educational planning, in school conferences and meetings.

- (c) Every attempt should be made to increase his sense of adequacy by providing tasks which he can do. In the home, the demands which are made must be the demands to which he can respond satisfactorily rather than the demands which are against the very needs of his development. Moreover, he needs to feel that others do care about him and have confidence in his ability and potentialities. Much can be achieved if he is given opportunities of legitimate release of his emotions in conversation, play, art, music, scouting, debates and discussions.
- (d) One of the very serious frustrations that faces the adolescent boy in India is that he does not have any vocational goal. He does not know what courses he should take during schooling. This causes a great deal of confusion, uncertainty and emotional tension which can be avoided if proper vocational guidance and counselling facilities are made available in the school.
- (e) Both teachers and parents can help the adolescent in developing a healthy philosophy of life by providing them with knowledge of various ideals and value systems, through useful discussions and 'readings' on problems that are raised by him. The school has a great responsibility to help the adolescent find himself and help him develop the outlook on life which is consistent with democratic philosophy. It should be a philosophy that helps him to face the realities of life rather than escape from them. It should be a philosophy that helps him in achieving socially responsible behaviour.
- (f) Both school and home should help the adolescent develop healthy peer-age relationships and friendship. The adolescent is particularly sensitive to the opinions and judgments of his own age group. These should be respected. Bowley points out that "a rich social life, with

opportunities to meet many types of people, of varying ages, can help the adolescent work through his social growing pains more readily. He needs younger people to protect and assist; elder people to admire and emulate, and boys and girls of his own age to share interests and experiences." (4)

Thus adolescents, like all human beings, need affection, encouragement, appreciation and trust from those who mean something to them—parents and teachers. Adolescents who enjoy all these develop into happy, confident and socially adjusted adults. But when these needs are not satisfied and when they have no proper guidance, they develop certain behaviour problems such as excessive day-dreaming, truancy, running away from home, stealing, rebelliousness and many others, and are, thus, in danger of losing their mental health status.

The Mental Hygiene Approach to Curriculum

Having seen how the fundamental emotional needs of children can be met or satisfied, in various stages of growth, with a view to ensuring mental health of our students, we can now direct our attention to discussing a few other significant aspects of education from the mental health point of view. One such aspect is the curriculum.

Modern educators and mental hygienists are agreed that the child should be the central factor in the curriculum construction: his needs, interests and experiences should be considered in the classroom, and he should be trained towards worthy social ends. It should be based on an understanding of individual differences in learning capacity. It should suit all ability levels. The immediate rather than the distant future must be kept in view, and the activities of the school should be of real worth and interest to him, bearing a definite relation to the life of the child and the community.

The curriculum should be flexible and adjustable to the need of pupils at every stage. It should be dynamic and possible of revision so that it may be in harmony with changing social conditions and should reflect the latest developments in educational philosophy and psychology. An elastic curriculum is based on areas of study rather than on subjects. Again, it should reach out to include those community activities and experiences that will expand the pupils' intellectual horizon and will give him an understanding which is based on perceptions that are real rather than imaginary. The curriculum, from the mental health point of view will incorporate the so-called extra-curricular activities such as dramatics, writing, games in the very fabric of the school programme. It will be a continuous and progressively developing thing that will fit the student for competent participation in home, social and vocational activities.

One of the important criteria of curriculum-construction, from the mental health point of view is its 'totality' or 'integration'. Traditional compartmentalisation of the subject-matter should be discouraged. The experience should be presented as a whole. Integration will be possible if we have the activity curriculum, if the controversy between cultural and vocational subjects is reduced, if the emphasis on traditional subject examinations goes and if education of children is informed with coherence and continuity from subject to subject, from class to class, and from school to work, society and life.

Mental Hygiene Approach to Methods of Teaching and Classroom Practices.

Mental hygienists agree that any method of teaching that affords pupils the satisfaction of being successful in their school work and that reduces the emotional shock of failure is thereby instrumental in achieving emotional adjustment or mental health." (20) There are certain principles that should underlie the healthy methods of teaching. They are as follows :

- (i) Teachers should regard the failure of a pupil as a challenge, not as an offence or as a defeat or humiliation. They should find out the causes of the failure and suggest remedial approach. These may be lack of interest in schooling, physical handicaps, emotional instability with attendant inner conflicts that distract attention from the work at school or the unsatisfactory home conditions.
- (ii) Teachers need to guard against the tendency to answer questions because 'learning is doing, and the active seeking of answers will be more profitable to the pupil than a verbalised answer that seems to satisfy.' Again, the habit of independence should be encouraged. The pupil is not to be denied the joy of personal discovery.
- (iii) All learning activities should be properly motivated by the teacher by and through the use of various social urges and acquired interests of the students. Motivation arouses the interest of the learner and that in turn ensures effective learning e.g. personal motives such as feelings of belongingness, guarding against strong interfering emotions, feelings of accomplishment, and satisfaction from praise and reward, tend to create and expand interests.
- (iv) The principle of learning by doing or activity is another significant principle. Learning becomes easier, quicker and more effective if the child is physically as well as mentally active in the classroom. This

principle is the corner-stone of such methods of teaching as the Project Method, the Montessori Method and the Dalton Plan.

- (v) As all behaviour is purposive, the teacher should try to increase the purposefulness of school work by making goals clear, desirable, and attainable, by making use of grades, examinations and rewards as a means to an end rather than as ends *per se*. The school work becomes purposeful if all learning is linked with life as far as possible. Lessons should be realistic and have a bearing on their daily life in the community.
- (vi) It is desirable that the teacher capitalises on the transfer value of the school work, whatever technique he is using. This, according to Bernard, "can be accomplished by pointing out the common elements in related situations, by evolving generalisations, by stressing pervasive ideas, and by seeing to it that teaching is at the understanding level of the student." (2)

One can point out here certain questionable practices in our schools that are inimical to the mental health of school children. These are the fragmentation of learning, the tendency to make learning isolated and remote from the life situations, in the form of independent subjects, the system of uniform grading, examinations and marks, the use of grades which may be unreliable, the fallacy of non-promotion and not realising that the threat of failure is a negative incentive, the unrealistic nature of home assignments, the tendency towards authoritarianism and restriction of freedom, the over-emphasis on speed in learning and the confusion of ignorance of students with their misconduct.

Mental Hygiene Approach to School Administration

Speaking generally, the school administration conducive to mental health, would scrutinise the educational policy and practices in terms of the happiness and welfare of students. It would view the machinery of management primarily as the means for carrying out an educational programme designed to meet human needs. The value of buildings, finance, equipment, supplies would be judged in terms of their effect on children's growth and development. Every attempt should be made to make human relationships within the school system more satisfying and wholesome. Improvement in teacher morale and efficiency can be expected if school administrators become more concerned with the human aspects of education.

The administrator can create an emotional climate within the school which is conducive to mental health. This he can do by

building and maintaining democratic relations with his teachers. This implies "sharing his powers with them, trusting them to do the right things, consulting them on matters which affect them, and treating them basically as equals" (16). But more than that, the administrator should have the human touch about him, should be friendly and warm and should regard every teacher as an individual. He should make himself available to teachers and be a willing and sincere listener. "He should encourage not only verbal communication but also the communication of feelings which often are more important than the words expressed" (14).

Again, it is necessary for administrators to see how they can enhance the self-respect and professional confidence of teachers. Teachers, like others, need recognition again and again and a continuing sense of achievement. Hence informal talks, judicious use of public praise, encouraging teachers to experiment with new techniques, consulting with them regarding developments in their teaching speciality, are some of the administrative practices which will be conducive to mental health of teachers and students.

The administrator plays an important role in home-school relations. It is his duty to bring about constructive relationships between the two by developing a climate of understanding in which parents and teachers can work harmoniously. Effective home-school cooperation is a major source of mental health conditions in the school.

Mental Hygiene Approach to Discipline

The old discipline was definitely of the authoritarian type. It was synonymous with good order in the classroom. The teacher's word was law and failure to conform was punishable. "Even inability to learn the tasks required was thought to be evidence of innate stubbornness and was punishable by caning, in order that such perverseness might be driven out of the developing individual. Whispering, talking out of turn, leaving one's seat or the room without permission were acts of insubordination." (2).

The modern concept of discipline which incorporates mental hygiene principles assumes that order which results from compulsion is not necessarily good discipline. On the other hand, good discipline is the hearty performance of duties, as well as freely chosen activities. This performance is to be in an orderly manner and with such an understanding that due regard is given to the rights and privileges of others. Again such discipline is to encourage the development of each individual's unique personality. It is tantamount to self-direction—a personal direction of actions that are purposeful and self-determined. This is expressed by Kaplan when he says that the ultimate purpose of discipline is the emergence of a mature adult who is capable of functioning with a minimum of external control, and who has the qualities of self-reliance, and social sensitivity that are characteristic of mature persons.

The mental hygiene view of the purpose of discipline requires an understanding of the various factors which influence child's behaviour. These factors could be the environmental conditions, the teacher's personality and his attitude towards children, the nature of the instructional programme and the group forces which arise in the classroom.

According to mental hygienist the teacher-direction has its place in effective discipline but it is not to be authoritarian in any way. They are of the view that wholesome discipline requires that sarcasm and ridicule should be avoided and their place should be taken by courtesy and kindness. Pupils should be kept busy with interesting tasks because busy and interested pupils will keep themselves away from objectionable and annoying behaviour. Other means of discipline which are approved by the mental hygienists are the rewards which are inherent in the work on hand, the recognition of the group mores, teacher's confidence in pupils and the ability to exercise a positive authority and enjoyable classroom atmosphere.

The mental hygienists think that firmness is necessary in the classroom. Firmness, however, does not mean strictness, nor does it mean domination. Moreover, discipline should be appropriate and consistent. Appropriate discipline always takes into account the individual, the time and the total situation. Setting a good adult example, the use of reasoning and the provision of substitute activities are other means of establishing discipline which conform to the mental hygiene values.

Special Services for the Mental Health of the School Child

Paul R. Mort has aptly remarked that we cannot leave adjustment to chance, even in the richest environment. The mental hygiene movement has highlighted the importance of starting a few special services for helping those children who may be problems in scholarship or behaviour due to such causes as improper classification or methods of instruction at school, unwise and erratic management at home, broken or unstable homes, poverty, lack of suitable recreation, mental or physical defects etc. These special services include the activities of the visiting teacher, child guidance clinics, the school social worker, the school psychiatrist, the school psychologist, the remedial teachers and the generalised guidance programmes. It is high time that all these services and facilities should be made available for children in Indian schools. But it must be realised that mental health in our schools cannot be left to specialised services, however valuable these are. In the long run, the most important work the schools can do for mental health will have to be done through their everyday activities—through teachers who understand human behaviour, through curriculum experiences that will help children grow and develop to their maximum, through methods and practices of teaching that enhance a sense of achievement in pupils, and through discipline that arises out of self-

direction. As Edith Everett has expressed "Mental hygiene functions in education-so long-or so far-as it is intrinsic, and not thought of as a separate discipline or a body of knowledge."

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In ordinary life some deviations in the process of growth and development are of common experience. These deviations, so far as the normal health is concerned, can be either physical or mental, but generally parents and guardians feel more concerned about physical ailments and take their children to hospitals or private doctors for treatment. Mental ill-health characterised by various symptoms is ordinarily ignored. In the modern world remarkable progress has been made in the field of medicine which caters to the bodily needs and although some progress has been made also in the understanding and treatment of mental illness, in this century this is comparatively a new field. So far as deviations from normal mental health in children are concerned, the ignorance and apathy is still great and parents consider themselves quite competent to look after the mental health of children and resent very much being reminded that some of them are not capable of bringing up mentally healthy and happy children.

Basic Needs. The child is like a plant posited in the social soil of the community. He draws nourishment of various sorts by spreading roots, as it were, in the social soil. These roots are the relationships or connections which he establishes with other members of the family or the community at large, and by analogy, the more roots or the relations and the more harmoniously they are established, the more abundant the nourishment will the child draw in and thrive and blossom. Just as the plant requires the satisfaction of its needs for air, water, minerals, sunshine and protection against adverse weather conditions so also the child requires the satisfaction of the various needs for his healthy and full growth. There are various physical and fundamental psychological needs. On the psychological side, the child needs food, water, air, rest and change and on the mental side are the needs for security, affection, freedom, play, creative contribution, satisfaction of curiosity, thirst for knowledge and understanding. The child is ordinarily said to be selfish but the child not only wants to get love and affection he also wants to give love and affection. In fact human beings from the very beginning are both selfish and selfless as self-seeking and self-losing go and grow together. Many studies and researches in psychological medicine in recent times have brought out that the most fundamental need is the need for love, both to receive love and to give love, and many symptoms of mental ill-health are traced back to deprivation of love at some stage in the life of the individual at

the hands of some dear and near one. In like manner there is the great need for feeling free and independent. Even a little baby whose hands and feet are caught hold of, will wriggle and squeeze and fret and fume and will try to extricate himself from even such momentary bondage. Children and, for that matter, all human beings, long to feel free though tied to the tether, as it were, by their physical, mental or emotional limitations. Children, likewise, have a craving for play, to exercise their limbs and minds and to spend their extra energy. There is the curiosity to learn and to know new things and to jump into the unknown. Children wish to know the why of every-thing and their constantly questioning mind shows the thirst for understanding the nature of things and to have insight regarding the cause and effect sequence. There is also the basic need of creating, of making some contribution which will have the stamp of one's individuality and which one can call one's own. Children, like adults, want to have a name for themselves and to be counted as somebody and to be accepted and appreciated by the members of the family or the group and to be remembered by their achievement or contribution, howsoever small it may be.

These are some of the important basic psychological needs, with the satisfaction of which the child will grow normally and healthily to his full stature, and with the frustration of which will be found the causes of many mental symptoms or aberrations.

Place of Heredity. Sometimes it is said that children are born with certain inherited mental difficulties or problems, as if, they are passed on to them by their parents like property. But recent studies confirm that children are not born 'problem' but are made 'problem' by problem parents; in particular, as Neil asserted "there never was a problem child; there have always been problem parents." Every child grows from the fertilised ovum or "Zygote" in which there are twenty four pairs of chromosomes, which are further divided into genes. Although on the physical side there is evidence of parental features and traits being inherited by the offspring through the genes as far as mental, emotional or social character traits are concerned, heredity does not seem to play so great a part. Whatever evidence there may be of children taking after their parents with regard to mental or character traits, they can be explained by recourse to the process of social influence. Children have a very uncanny sense of drawing in, as it were, both the good and bad social and emotional traits of their parents. In ordinary parlance, we hear statements, that he is stubborn like a mule as is his father or how could he learn or behave decently as his father never did so. From some such statements the inference is ordinarily drawn that emotional or temperamental qualities or defects of parents are inherited by children. But as already pointed out the evidence is more to support the idea that emotional or social character traits are acquired, as a result of upbringing, and the explanation of various

types of maladjustments or various behaviour problems lies in the uncongenial or adverse environmental factors. So to understand difficulties or problems presented by children who may be considered as deviations from the normal or who may be called mentally-ill, we have to look for conditions in their environment and not so much in their genetic constitution. We have to know how his upbringing has been, what and how much fathering and mothering he has had, which of his physical and psychological needs have not been fulfilled and what dissatisfactions, deprivations and frustrations he has had. The causes of mental illness and various types of symptoms, indicating behaviour or personality problems have to be sought or looked for in the social environment of the child and in his relationship with his parents, teachers, brothers and sisters and when he is grown up with his superiors and co-workers and later with his spouse.

Personality and Behaviour Problems.

A strict dichotomy between personality and behaviour problems is not possible and in fact all problems are personality problems because ultimately the behaviour is the function of a particular personality, and behaviour as such, separated from one's personality without reference to one's personality is only an abstraction. All the same, since these two terms are usually and commonly used in practice, it may be said, that certain problems can be called personality problems in the sense that they are more localised or rather internalised within the individual himself and the onus of which falls more on the individual himself. Problems like shyness, nervousness, anxiety-states, insomnia, stammering and the like can be named as personality problems, as the effect of these symptoms on others in the outer world is not directly so much as on the individual himself suffering from these symptoms.

On the other hand, problems or symptoms of mental ill health which have a bearing and an effect directly on the outside world or society may be called as behaviour problems. Aggressive behaviour, stubbornness, temper tantrums, and various forms of delinquent behaviour fall in this category. In these cases it is others who suffer more than the individual himself, although the person or the child having these problems is neither happy nor healthy.

It is worthwhile to devote some time and attention to the understanding of the etiology of the genesis of some of the important problems of both these categories to enlighten parents, teachers or educationists and all those who have the care of children as their charge, so that they could help in the prevention of some of these problems, as prevention is always better; and, at least, in the psychological field cure is not so complete and not so certain, howsoever good the treatment may be, every illness leaves its scar.

Dull or Deficient Children.

Some children are born dull or mentally deficient and they are sometimes categorised as idiots, imbeciles, morons and borderline

cases corresponding to the I.Q.'s ranging from 0-25, 26-50, 51-75, and 76-80 respectively. These children have their own characteristics and limitations for performance, achievement or understanding. They present problems for parents, teachers and the community at large. Out of ignorance people ordinarily consider strange factors as the causes of mental deficiency in these children. Some think that lunar eclipse caused mental deformity; others consider it as the effect of certain articles of food or as the effect of some medicines. Some consider that it is the result of *Karma* in previous life and some as the effect of *Karma* in this life or as being due to the excesses in their sexual gratification. I know the case of an old man who came to me with his imbecile son of 22 years for advice. The young man followed his father like a pet dog and was constantly to be watched and looked after. The old man shaved him, and fed him as he was a widower. He could not leave the boy alone for even a short time lest he should do some harm or injury to himself. The old man cursed his lot to be tied to this mental defective, as this prevented him from earning an honourable living because he had to live mostly on the charity of his relations or friends. All the same the old man seemed to have resigned to his fate by accepting his fault that in his young days after marriage he indulged too much with his wife and that, he thought, had weakened the semen, of which the boy was the product. The case of this old man was obviously very pathetic but such cases of ignorance are not uncommon. Sometimes heredity is blamed as the cause of mental deficiency. But studies reveal that this is not correct. Bright parents are known to beget idiotic or very dull children and very dull parents are known to have produced, sometimes, extremely bright children. Intellectual powers are not inherited or passed on to offspring by parents or grandparents like property. All the same mental deficiency is innate and is not produced by environment. The cause of mental deficiency, really, lies, in the genetic constitution of the fertilised ovum in which the genes responsible for the growth of the brain may be defective or if the genes corresponding with the brain formation be normal, the environment in the intra-uterine life of the foetus is adverse or uncongenial, leading to the malformation of the brain. Carmichael has demonstrated that if the fish embryo, at the time of the formation of the eyes, is put in the solution of chlorotone, only one eye will develop, whereas under normal conditions two eyes grow. Similar results can be expected in the case of the human embryo and malformation of the brain can either result from defective genes or from normal genes developing under abnormal or adverse conditions. Illness in the mother or deficiencies in food or water of the mother during pregnancy may be other causal factors in certain cases. Excessive haemorrhage or some injury due to the use of instrument at the time of birth may lead to deficiency. It is, however, not possible to ascribe any of the above causes to specific cases of mental retardation but parents and teachers have to have better understanding of the possible causes of mental retardation.

The presence of a mentally deficient child creates psychopathological conditions for both the parents and the child and for the other members of the family or even for the community at large. Parents ordinarily are hesitant to accept the fact of the child's being mentally retarded and wish him to act and behave like a normal child and they often push him up, as it were, for normal achievement and behaviour. The child responds to the best of his capacity but feeling the strain he breaks down and is demoralised and shows symptoms of aggression, temper tantrums and various forms of anti-social acts. The parents feel ashamed of having a retarded child in the home and do not let others easily know about him; they do not have the courage to take him out in public. They suffer from a deep sense of inferiority and guilt, as they consider themselves responsible for the retardation in the child and this sense of worthlessness, inferiority and guilt undermines their efficiency, health and happiness. Such a pathological situation in the home could be handled and the parents and the child could hope for better living, if causes of mental retardation are properly understood and if a proper attitude towards the child and towards the situation as a whole is built up. It is one of acceptance of the child without any reservation or guilt and to do as much as possible for his growth and education.

Education of the mentally deficient can properly be undertaken in special institutions and parents could be saved from a lot of tension and wastage of energy and time if such children are taken away from them and put in special institutions. These children are slow in understanding and are more "object-minded" than "idea-minded" and their education, howsoever possible in individual cases, has to be through practical media. They will learn at their own pace through objective and practical means and their performance cannot be judged in terms of normal standards. The teachers for dull children have to be very patient, forbearing and sympathetic besides having the technical skill and training for educating the retarded.

Backward Children.

There is a large majority of children, constituting about 60% of school population, who are generally called normal with I.Q.'s ranging from 90 to 110. Some of them present educational difficulties and certain behaviour-problems, because of their backwardness in school. Bright children also can be backward in so far as their achievement and academic progress may be less than what their intellectual powers could make it possible. Backward children, therefore, can be dull, normal or even very superior in intelligence. They may present certain personality or behaviour-problems. Some of them stay away from school, run away from home, commit certain anti-social acts like stealing, cheating, gambling etc. Some may become aggressive or withdrawn and nervous or anxiety-ridden.

Backwardness, generally, in daily life or specific in school subjects, may be caused by congenital dullness or by certain environmental factors in the process of growth. The factors can be physical, economic, emotional or social in nature. There is generally more than one factor going into the genesis of backwardness in a particular case.

No one can deny the importance of physical illness and general debility or physical injuries causing a weak developmental impulse which makes children sluggish and slow in learning but all backwardness or scholastic failure is not due to some physical or physiological defect ; it could be due to intellectual inferiority or to certain social or emotional factors.

The social climate of the home, where the parents' attitude is either too harsh or dominant or too indulgent, contributes to backwardness of even bright children. Emotional imbalance shown by parents lead to anxieties or nervousness, which are difficult to be overcome by the best efforts on the part of the child, who is likely to be demoralised and lapse into laziness and indolence. The attitude of slackness, carelessness, unpunctuality and evasion on the part of parents also makes a child irregular, deceptive and dishonest in his school work. A study of the emotional and social life in the home is, therefore, extremely important to understand the causes of backwardness in children ; cordial and wholesome social relations are the nutritives for wholesome growth and productive work. Due to trouble at home the child's mind may be wandering and restless and instead of concentrating on his lesson he may be brooding over his father's cruelty towards his mother. He may pine to go back from school to his mother who, he may fear, may have been injured. When the mind is agitated and torn by conflicts no concentration on constructive work is possible. There are so many cases of even very bright and superior children who have been teased into backwardness by the unwholesome parental influence or the adverse emotional and social conditions within the home. Under these conditions their abilities remain unexpressed and undeveloped. They may be looked upon as very queer in the home or as oddities in the school. Such children may become indolent, wilful and disobedient. Not finding adequate opportunities for feeding their fertile minds and quenching their thirst for new experience, adventure and creativity, they are likely to become irritable, hostile, vain and aggressive.

There is the glowing example in my experience of an extremely bright boy of about 10 years of age. He could read English, Sanskrit and Hindi very fluently although not understanding the first two. When at an early age the people in the neighbourhood found him reading Sanskrit texts fluently, they thought that he was a freak of nature and that it was due to the *Karma* of his previous life that he was reading the religious texts so easily. The news reached the Member of Parliament of that area who on interviewing the child felt

very much intrigued and interested and mentioned the fact of this curious boy to the President, the Prime Minister and the Vice-Chancellor of the Delhi University. The case finally came to me for investigation. The boy was undoubtedly extremely bright and of very superior intelligence estimated at 165. The case history revealed that from the very beginning he used to sit by the side of his elder brother who was reading in a school and by listening to his reading Hindi and English languages, this child picked up the alphabets and the sounds of letters at a very early age and for a child of his intelligence it was quite easy to begin reading at such an early age, although, as mentioned above, he did not understand at all anything of Sanskrit and English and his pronunciation also was very defective. In any case, in so far as his emotional and social development was concerned the boy had very strange notions. He would not look at any female young or old, would not touch certain items of diet, would not listen to music, nor play about like other children. Getting up quite early in the morning, he would read *Hanuman Chalisa*, *Ramayana* and other religious texts without much understanding. He declared that he would never marry as that would entangle him in the life of lust and pleasure. He was quite vain, irritable and haughty. The case history also indicated that he still used to sleep with his mother and used to even urinate in the bed. It was also found that his everpresent and fond uncle would take him, with the religious texts wrapped up in a red cloth, to persons of consequence and ask him to 'perform' and get money from them. The child, not finding enough material to feed his fertile mind on, was becoming quite restless, irritable and aggressive. He was obviously backward even in his school attainments. Socially and emotionally also he was not growing like a normal child. Later on, at the suggestion of the writer, his State Government made some suitable provision for his education by granting him a suitable scholarship.

This instance and many more like this indicate that even very bright children can be backward in their intellectual attainments and in their social and emotional development if the environment is not congenial, and if the material provided to them for learning is not quite challenging. So the explanation of backwardness of any type in children, particularly what we generally call intellectual backwardness lies in factors of various sorts, physical, economic, social or emotional besides mental deficiency. The economic factors for the creation of backwardness among children are well known. Cyril Burt (3) said "It is in the poor overcrowded, insanitary households where families are large, where the children are dependent solely on the state for their education, and where the parents are largely dependent on charity or relief for their own maintenance, where both birth rates and infantile death rates are high and infant's health is undermined from the earliest days of his life that educational backwardness is most prevalent." It is inevitably that in the crowded poor homes where brothers and sisters and other relations

share the same bed even in excessive heat and with distractions of the street, children feel disturbed in their sleep and rest. The children of such homes go to school, if at all, tired and almost half asleep and they are unable to pay attention to lessons and to the work of the class and so are bound to be backward in their studies. In poor homes, children doing tiring household duties like cleaning, washing, shopping, minding the baby, with very scanty meals are worn out and they go to school half-famished, and are dull drowzy and lethargic. When such children are relieved of their drudgery and tasks at home, they are found to be smart in the school, making up the deficiency in their studies very quickly.

It is not necessary here to go into the details of backwardness shown by some children in particular school subjects where again some of the important factors mentioned above will be found operative. Specific backwardness in any school-subject or general backwardness is noted to be a fact in the case of children with personality or behaviour problems. When the mind is not at rest and when there is no happiness or joy, no constructive work is possible and the children become aggressive or recessive, or stubborn or restless, or timid or delinquent. They are found to be and are bound to be far behind in their scholastic attainment and thus backward.

Delinquent children—A word may be said about 'delinquent' children, those who commit anti-social 'criminal' acts. They violate the law of the land and do such things as are considered crimes by law. Activities like theft, gambling, violence, cheating, wandering, truancy, intoxication, pick pocketing are the type of activities which if done by an adult will see him behind the bars, as the law of the land does not permit such activities. When such activities are committed by children they are called delinquencies.

There are always delinquent children in society either in the form of what may be called actual delinquents or potential delinquents. By potential delinquents is meant that some children have the delinquent character formation in them and may at any time become actual delinquents when there is a precipitating cause. There is the further fact that number of delinquents made out from official records is extremely small in comparison with the actual number delinquents existing in life. In the first statistical survey of its type conducted by the Ministry of Education in 1951 only 28,210 was reported to be the total number of delinquent children who were put on trial for various offences in all the states in the Indian Union during 1949. In the second survey published in 1954, the total number of cases of child delinquency put up for trial during 1950, in all the states (excluding U.P.) was reported to be 40,190. Both these figures are quite nominal and indicate only a small fraction of the magnitude of crime committed by young offenders in this country.

Studies in other countries like America or United Kingdom also indicate that the number of delinquent children known from official records or from the courts is extremely small in comparison with the actual number of delinquent children existing in society. The small number of cases of these children found in official records is due to various reasons. Firstly, many delinquent children committing anti-social acts are not apprehended by the police and even some of them when caught by the Police are released because of some pressure. Secondly, the bright children in this group escape detection. However, the large number of delinquents is known to be existing in all societies and countries and the number is certainly much larger than what is recorded officially.

It was said above that there is a large number of potential delinquents who carry a delinquent character-formation which can, at any time, lead to the commission of any anti-social act, turning the potential delinquent into an actual delinquent. What is the meaning of delinquent character-formation? How does it come to be? The answer to these questions will explain the genesis of delinquency. The essential feature of a delinquent character is that the individual lives more at the level of "pleasure principle" that is to say, he loves to have momentary pleasure and does not subdue his pleasure seeking impulses for some more abiding gains in future. One delinquent wishes to have so many mouthfuls of momentary pleasures here and now and will not forgo them for more abiding values in the near or distant future. Secondly the delinquent has very poor super-ego formation or the system of values which can serve as a check on his impulses. When he has no fear of being detected by anybody in the external world and has no inner check in his inner self, he is easily led to commit the anti-social acts.

The formation of the super-ego takes place by introjecting the parent or the guardian, that is to say, by imperceptibly following or copying the movements, the behaviour, the qualities and the system of values of the elder under whose control one lives, in the home. In the case of delinquents, it is noted that the conditions for the formation of a stable super-ego do not exist in the home, as the conditions under which they live do not permit a proper identification with the elder. Such a situation in the home is created by either too much of harshness, maltreatment, nagging or criticism by the elders or by neglect or rejection. Unless and until the child feels secure and accepted in the home, the imbibing of qualities of the elders becomes impossible. This, in brief, is the reason why delinquent children have a very poor super-ego which characterises them as criminal children or as potential criminals in comparison with normal children.

Sometimes it is said that delinquents are mentally deficient. Lambroso, for example, thought that delinquents had defective physique and defective intelligence. Later also psychologists in America

and elsewhere pointed out that delinquents were feeble-minded. But more recent studies do not support such views. Some recent studies assert that though the delinquents are not mental defectives they are as a group rather dull. Burt, for example, considered that the average I.Q. of delinquents was about 85. Merrill and Healy and others also give figures of the average I.Q. ranging from 80 to 90. In a study conducted by the writer of 140 juvenile delinquents in the district jail in Delhi, the average I.Q. of the group was found to be 83 ranging from 40 to 122 and a large majority of delinquents fell between 70 to 90 I.Q., which is also borne out by many recent studies which proves that delinquents, on the whole, are rather dull.

Earlier studies emphasized that the criminal character and low intelligence went together and that defective intelligence was a necessary condition for delinquent behaviour but the investigations carried out by the writer confirm the views of other recent investigators that there is no casual relationship between intelligence, and delinquent behaviour. Intelligence in itself has hardly any bearing on the behaviour difficulties of children; these are the reactions of the entire personality, while intelligence is only one aspect. Defective intelligence may lead to delinquency in one environment and may not in another. On the other hand, high intelligence is no guarantee for good behaviour as in the face of emotional conflicts and difficulties even a man of high intelligence may behave like a criminal. Delinquency, therefore, is not a problem of the mentally defective but is caused by emotional imbalance in the face of frustrating and thwarting environment.

Sometimes it is said that intelligent children commit crimes which call forth higher intellectual powers, whereas dull children commit simple crimes which do not require much planning or thinking. There is, however, no conclusive evidence that the type of offence and intelligence are related. But on the whole, it is noted that more intelligent delinquents are found to commit major crimes of forgery, fraud, robbery, cheating and pick pocketing, whereas the less intelligent commit crimes of a minor nature like gambling, begging and sex offences. In the investigation carried out by the writer it was, however, found that cheating, pick pocketing and planned murder were committed by those who had I.Q.'s above the mean of the group whereas begging, intoxication, gambling, assault, vagrancy and sex-offences were found to be committed more by those with I.Q.'s below the mean of the group. However, it is not possible to generalise that delinquents with high I.Q.'s will commit offences of one type and those of lower mental level another type. "There is no basis in accurate comparison of normal and sub-normal adolescents, with respect to delinquent behaviour." A more intelligent delinquent, for example, can commit sex-offence or other similar anti-social acts.

It is also sometimes said that delinquents are born and that from the beginning they lack "moral sense". Writers like Maudsley,

Dugdale and others supported this view from their own studies of such cases but recent findings do not support the view that delinquency is innate or that it is inherited from parents just as property is passed on by parents to the offspring. The correlation between neurotic symptoms and emotional immaturity of parents and of children is found to be only 0.30. This low correlation does not support the view that criminal behaviour is inherited. Burt, Healy and others are now emphatic that there is no evidence of criminal traits of parents being passed on to the offspring. Delinquency, therefore, is not inherited. It is on the other hand the product of social and economic conditions and is essentially the result of the friction and a tussle between the individual and the social environment. As is brought out by the study conducted by the writer, delinquency is the result of social disorganization, inadequate housing conditions, poverty, disease, criminality in parents, bad companionship and wrong approach to the children in their development by elders, parents or step-parents in their treatment of the children. Some of the many factors which have been isolated and which have a direct bearing on the genesis of delinquent behaviour can be mentioned here. Maltreatment by parents and step-parents or employers is found in 46.7% cases, poverty in 34.1%, neglect in 20.7%, rejection in 15.6% and domination in 16.3% cases. In addition to these there are many factors like broken home, maladjustment in school, exploitation, unemployment, dull home environment, temptation and so on which are found to be operative in the production of delinquent behaviour in children. The most important factor, however, is the factor of mal-treatment or domination experienced by the child at the hands of one or the other of the elders in the family. Under conditions of physical violence, intimidation, beating, nagging, constant criticism or fault-finding, the social climate in the family is so created that the child feels very insecure and tries to adjust himself to the best of his capacity but ultimately finding the situation absolutely intolerable and beyond his control, he revolts against such treatment. This rebellion results in the committing of the anti-social acts. The child runs away from home or plays truant from the school and is found begging, stealing or indulging in any of the many anti-social acts. The case of a boy of fourteen is worth reporting. He was a strongly built boy and his uncle had married his mother after his father's death. This boy did not like his mother marrying his uncle who was also very much inimical to the boy and wished to see him away from his sight. He was not only considered by his uncle as an interference in the marital relations with his mother but was also a hinderance in letting him have the entire possession of his father's property. So he used to mal-treat him and rebuke him. Finding no other alternative, the boy, one day, collected whatever ornaments and things he could lay his hands on and left the home at night. He lived on the money so acquired for some days but then was out of pocket. He had eventually nothing to eat and, one day, being quite hungry he was roaming on the Jamuna

Ghat when he tried to steal the clothes of a bathher who, however, saw him and raised a hue and cry. Some people hearing the noise rushed, caught him and handed him over to the Police who sent him to the district jail for trial and it was there that the writer interviewed him. This is only one of many examples of children going on the wrong tack and committing even very heinous crimes, when their very life is in danger of their integrity is challenged.

In addition to mal-treatment, poverty is noted to be another factor in the production of delinquent behaviour. Children from poor homes, where they do not have enough to eat, go about in a famished condition, pilfering things or otherwise voluntarily planning to break open shops or houses. Quite a few of the starved and half-famished children even steal things from the neighbours as in poor homes there are lots of temptations, everything being exposed to the gaze of others. Sex-offences, gambling, begging and such other criminal activities also are noted to be more prevalent among children of poor families. Writers like Burt have very clearly brought out that poverty is one of the very important factors in the development of delinquent character. "It is in the poor, overcrowded, insanitary households where families are large, where the children are dependent solely on the state for their education and where the parents are largely dependent on charity and relief for their own maintenance that juvenile delinquency is most rife". (4) To give a concrete case one boy was caught while plucking the *Gainda* flowers from a field and he said that he was hungry for the last two days and having nothing to eat he thought of plucking those flowers to sell them to the garland-maker and buy bread.

It must, however, be said that the anti-social acts committed by these children are generally committed with the connivance of another and not very often alone. In such companionship children feel a little secure although quite often it is rather the dull children who are exploited by the brighter ones and sometimes it is noted that the bright ones manage to escape leaving the dullard in the shackles of law. One boy, for example, was apprehended by the police party at dead of night, standing alone on the crossing of the road. He said that he was asked by his companion to stand there to have an eye on the police when he was himself breaking open the lock of the shop of a goldsmith. The brighter fellow, while doing the job, had already caught the hint of the police being nearby and had already escaped while the dullard was caught.

In any case there are so many problems connected with the question of delinquent behaviour which can have theoretical significance, but from the point of view of practically meeting this social challenge some ways and means have to be devised to tackle this social malady. Hints and suggestions can be borrowed from more advanced countries to deal with this problem. In the United Kingdom, for example, there are juvenile police, juvenile courts,

probation officers and social workers to deal with these cases who after having been tried by the juvenile magistrate are sent to what are called "*Approved schools*", that is the schools which are certified by the home office for the maintenance and education of such children. In India also laws have to be changed to make them more and more progressive and reformatory rather than retributive. It must also be an effective machinery for the prevention and cause of delinquency. Provisions for the proper custody, maintenance, education and training of delinquent children should be made in each state, for it is well said that if the society will not engage them in useful and constructive pursuits while they are young, they will keep the society busy when they are grown up.

Aggression among children.

The next important behaviour problem which is of daily occurrence is that of aggression in children. Some degree of aggression or violence, physical or verbal is not unusual or abnormal. Even a tame dog, for example, will bite if his tail is pulled or if he is disturbed while eating his food. Small children when interfered with in their games and other activities will fight, quarrel and will be aggressive. So some degree of aggression or show of temper is the normal course of life. But what may be a matter of concern to any parent or teacher is the persistent and unusual form of aggressive behaviour shown by certain children. Aggressive children are considered as problem children only when their aggression is unusual or unnecessary on the one hand and regular and persistent on the other.

There can be two forms of the expression of aggression. Aggression is expressed on things, objects or people in the external world by doing some harm or damage to them. This form of aggression is sometimes called sadistic or externalised form of aggression. But if the individual does not express his anger on others, his aggression turns on himself and this is called masochistic or internalised form of aggression. In such cases the person will beat his breast or thighs or break his head or tear his clothes or hair or break his things or do some injury to his own person and in extreme cases may even commit suicide.

There are so many examples which bring out these two forms of aggression. To illustrate the first form of aggression there is the case of a boy who was like a tyrant in the school and would beat other boys, particularly those smaller than himself. He was strongly built but was singled out as a boy belonging to a different and minority community. He was labelled by the group of children and teachers as an out caste and feeling this sense of rejection by the group, he became quite hostile to all and said quite often that he would teach every one of them a lesson and that he would see to it that all of them came to grief. He would fight with the children, tear their clothes, break their ink-pots and sates, throw away their caps

and shoes. He looked shabby and almost lost, and gave the impression of an extremely teased and harassed child. The reason for his aggressive behaviour was obvious. He was rejected by the group and felt so very insecure in the midst of children of the majority community. There are many other examples of children who are aggressively disposed when their security is threatened. The second form of aggression may be illustrated by the boy who had occasional fits and had a wound on the back of his head through falls while having fits. In the play room the writer noted that he smashed so many toys and other things. He enjoyed throwing water and mud on the clothes of the writer who worked as the play therapist. He would jump up and down with glee, doing damage to the property and even doing some harm to the therapist to whom, although, he often clung. His case history revealed that his father was very harsh and mal-treated him and beat him very often. Being a drunkard he was not at all happy with his wife and much less with this boy who had actually tied him to that woman whom he really wanted to divorce. This boy proved to him a great eye-sore and a hinderance and he could not tolerate his presence in the house and even wished him to die. That is why he used to beat him mercilessly. The boy feeling weak and helpless could not express his anger on the father, as it was naturally impossible and so the onus of the whole thing fell on himself and he began to have fits which caused injury to his head. In the play room he was expressing his hostility and hidden anger by smashing things. He expressed his ambivalent attitude towards the therapist sometimes by doing him harm and sometimes by trying to cling to him. This behaviour was naturally the expression of his ambivalent attitude of love and hate towards his own father which is a normal thing in all such cases. His aggression was more internalised as he was small and helpless in the presence of his father against whom he could not even raise a finger and so his anger turned on himself which resulted in fits and injury to himself.

In all cases of aggression, internalised or externalised, the basic fact is that there is some hinderance experienced by the individual in the normal flow of his life. He feels frustrated and very much interfered with in the satisfaction of some of the basic psychological needs. The most important psychological need is the need for love, love to be received and love to be given. In addition to this the sense of security felt by the child in self-expression and in the satisfaction of his sense of adventure and curiosity is another important factor. It is a patent fact that whenever any one of the important psychological needs is frustrated the individual young or old is bound to retaliate in one form or the other.

Sometimes the task given to the individual is either too easy or too difficult. In either case when the individual does not find himself fully and usefully occupied, he is likely to be aggressive and destructive.

The remedy in all such cases of aggression is to understand the frustrating factor in the life of the child and to see which of the important basic needs is not adequately fulfilled. After understanding the nature of the frustrating factors, efforts have to be made to remove them and to give the child a new start and a new orientation in life. In some cases the problem is very simple and not so deeprooted. A mere change of subject or change of task or just a change in attitude on the part of the elder will be found very useful. It is only the vision and understanding which is wanted on the part of elders or those who are in charge of children.

Obstinate children.

Somewhat akin to aggression are the symptoms of obstinacy in certain children, who persist in a course of action regarded as undesirable by others. A child may refuse to obey or he may talk back in the face of his parent or teacher. Such children may do just the contrary of what they are told, and some of them may be quite wilful, rebellious, argumentative, impudent and rude.

A little obstinacy in small children is just a passing phase and is ordinarily easily overcome, but the condition where it is persistent may present some difficulty and needs investigation and attention. The causes of obstinate behaviour have to be known. They may be faulty upbringing by parents or elders where there may be either too much of domination or too much of indulgence. Apart from this inconsistent disciplining and feelings of neglect, jealousy and rivalry in the minds of children there can be other determining factors. If a child is too much fussed about and is indulged too much in the earlier stages, he may resent strict disciplining later. He is likely to be disobedient, cheeky, and defiant. Children who are too much fondled and are shown too much of affection and attention are likely to think that every thing has to be according to their liking and that everybody else has to be at their command. With such an attitude they are not likely to think that others also exist and that it is not so easy or desirable to have everything done according to their own liking. They are likely to show resentment when something is not done as they desire. Too much of pampering and fondness shown to children is likely to make them capricious, restless, obstinate and wilful. It will make them moody and defiant. In a similar manner children who are too much dominated also sometimes show obstinacy. Circumstances arousing jealousy rivalry and discrimination are conducive to obstinacy. There is the case of a boy who felt that he was discriminated in being shown favour and consideration in comparison with his elder brother whom the parents often quoted as an example for him to be followed. The boy resented this attitude of his parents and in the interview he sobbingly said that he was denied everything and that his brother was given everything. He would often bang his head on the floor, scream, kick and use abusive language and he was quite violent,

destructive and threatening. The reason was obvious that the child felt discriminated against and felt very jealous of his elder brother.

Due to service conditions, the father had the privilege of sending any one of his sons to a public school on payment of nominal charges. The boy, being quite bright, was advised to be sent to the public school so that he could feel some importance, and could be fairly vindicated in his right to equal and fair treatment. Later reports revealed that the boy feeling honoured stole a march over his elder brother, as it were; he did very well in his new school and his behaviour even at home during holidays was quite normal and exemplary.

Obstinacy in many cases is due to sibling rivalry, particularly when parents out of ignorance side with some of their children and show them as examples of excellence for others. No child likes to feel small or inferior in comparison with his brothers and sisters. Whenever the child makes too much fuss it is better to leave him alone as too much of coaxing, appealing or entreating will not in any way help. If, for example, a child does not eat the food and makes fuss over it, finds fault with it and puts up new demands every time it will be helpful to remove the food and to leave him hungry. There is no fear that he would starve himself. Some time after or at the next meal he would himself ask for food. Too much coaxing or appealing at that moment would not help nor should there be any attempt to humiliate the child in any way. The best thing will be to leave the child alone even if he is crying, in a matter-of-fact manner and he will see the reasonableness of the deprivation, and he will learn to behave better by having suffered the consequences of his undesirable behaviour.

Sometimes, as already pointed out, it will be useful to send away the child to another home or school where he will build new contacts and will have a new start in his life. In grown up children in particular, a sense of companionship is to be created by sharing the children's interests or games. Parents should come down from their high pedestal and be like children. The stiff-necked attitude in parents when they consider themselves far bigger and superior to their children and consider it a slur on them and against their dignity and honour to associate with them is highly deplorable. Many problems of children will be automatically solved if parents take real part in their activities and be real friends to them.

Shyness in Children.

Ordinarily parents and teachers consider, disorderliness, naughtiness or other forms of overt disturbing behaviour as something bad, whereas submissiveness, quietness, obedience and shyness in children are considered to be praiseworthy. But from the psychological or mental hygiene point of view, it is the shy child or the withdrawing child who may be quite submissive, orderly and obedient

who is not well. It is true that initial shyness in small children, or even in others, in new situations when they have to face strangers or new things is just normal. In new environments like social parties, processions, meetings or fairs, the child will not ordinarily play or meet other children easily. He may keep his mouth shut and might cling to the mother or hide his face in her clothes. He may be quite self-conscious and unsocial. Such behaviour is not very much to be worried about. There is a normal phase of shyness in small children which is automatically overcome, but if a grown-up child persistently hangs his head or turns away his face when spoken to or does not easily play with other children and is seclusive, bashful, hardly showing any signs of smiling and laughter, such a child needs psychological help. Dull children quite often feel confused and recessive. The mentally retarded child is likely to be withdrawn and unsocial. But in the case of normal children when we find persistent unsociability, moroseness, shunning of company and an attitude of withdrawal, we have to take it as a significant indication of some mental disturbance. Such behaviour of shyness may result from too much of domination or over-protection or frightening experiences. The child is likely to be shy and withdrawn, if love is denied to him, or when he is made to feel guilty or in any other way inadequate and inferior.

Under dominating condition the child is suppressed and he does not develop sufficient ego-strength or confidence in himself and becomes deile and shy.

Sensitive children in particular who are endowed with a high degree of intelligence are likely to be very touchy and withdrawn under conditions of nagging, fault-finding and too much control or domination. Too much protection or indulgence also leave the child quite a cripple. He lacks self-confidence and always leans on adults for advice and control and always walks on crutches, as it were, as he has not been made to learn to fight his own battle and he has been given every thing readymade.

Children who are too much fussed about and too much attended to are not made to come out from their own shell of egoism and they find life hazardous and difficult to adjust to.

Fearful and frightening situations from the beginning will also produce in children the withdrawing attitude and a sense of fear. The fearful situations persisting in their lives for long make children recessive and reserved and they are likely to feel nervous or shaky in the presence of superiors or when called upon to participate in group activities. A still more important factor in the production of shyness among children is the denial of love by either parent or the guardian. There was a case, for example, of a boy aged five, brought to the writer for guidance and help. The child was very morose and withdrawn, giving indications of being

insecure and anxiety-ridden. The case history indicated that he was not wanted by the father as he was born to the woman whom the father did not want to marry. After marriage he had actually left his wife at her parents' home and, of course, he had visited her there a few times but his plea was that the boy was not his and that he did not want to keep him or his mother in his house. Due to social pressure, however, he had to bring them to his place but the child was an eye-sore to him and he used to beat him black and blue on the slightest pretext and the child felt frightened and insecure. He would not speak to anybody; when spoken to, he would hide his face with his hands, would not leave the house to play with children and would crawl under the bed when his father came home. There was no smile on his face and he looked lost and confused. The case was obviously that of rejection by the father and his shyness was an apparent result of his being an unwanted child.

The sense of inadequacy or inferiority due to some physical ailment or deformity like short stature, black complexion, snub-nose, limping, is likely to make the individual self-conscious and shy. But still more than this is the sense of guilt experienced by the individual arising from the conflict between the basic needs or urges and the ideas of good behaviour. Guilt feeling due to the satisfaction of the sexual urge, in particular, in a manner not accepted by society is the curse of shyness in many adolescents. These adolescents feel that they have committed some sin and are unworthy of the attention and affection of others. They feel guilt-ridden, morose and shy. In such cases, as it has been the experience of the writer while dealing with many adolescent boys and girls, proper enlightenment on problems of sex is found to be very useful and effective in altering their attitude and in bringing them out, as it were, from their own closed shells. In many cases the writer has noted that after the proper education and enlightenment had been given, the eyes of the morose brightened up and many of them left the consultation room happy and cheerful.

Fear and Anxiety Among children.

The next problem which we quite often come across in children is that of fear of imaginary things or what may be called phobias. Parents quite often frighten children of imaginary things like bogeys or sadhus, witches or ghosts or darkness or that they will be eaten up by rats. Such fear of imaginary or harmless things is irrational and undesirable. Some degree of fear is normal but if grown up children show such fears of harmless things like cows or lizards or darkness it is something to feel concerned about. Parents do not know what harm they are doing to the mental health of their children by adopting these methods of infusing fear. They develop from the earlier days a seclusive, timid and fearful attitude.

Such a fearful attitude in many cases is also developed by unfortunate fearful circumstances and this does incalculable harm to their development as well as achievement in life. There is the case of a boy well known to the writer who was very shy, timid and nervous, having no friends. He used to come home alone from school and would read to himself and would ignore the class-mates or school-mates even if they visited his house. He was always apprehensive of worst things befalling him and would expect mishaps and misfortunes at every step. He had some sort of persecutory obsession that people were against him and that everybody was there to harm him. The case history of his anxious and apprehensive attitude was that in his early life he was made to suffer threat and actual beating by older boys of the majority community, as he belonged to the minority community, which was the subject of loose talk and ridicule and for which even insulting words were used by members of the majority community. Apart from this apprehensive situation there were often actual incidents in his home; the neighbours used to quarrel and these incidents stunned and terrified the boy. He felt helpless and he knew that he could not have much protection even from his parents as they themselves lived in a state of nervous tension and fear of persecution by the members of the majority community. Such general and diffused fear made the boy timid and cowardly from the very beginning; he never made a mark in life by way of taking some risks or initiative to improve his prospects.

Apart from such states of mind of continued apprehension and nervousness, there are other anxiety states indicated by many other cases where we note the symptoms of loss of appetite, vomiting, nausea, abdominal pains, headaches, choking or suffocating sensations, palpitation of the heart, bed-wetting, insomnia or sleeplessness.

In the genesis of anxiety states there can be precipitating causes in the environment, but there will be certain predisposing factors in the individual himself. Some children, for example, have certain constitutional or temperamental dispositions for fearful reactions and this can help in the production of anxiety states. Some children possess illbalanced autonomic nervous and endocrine systems and in such cases it is easier for the child to develop symptoms of anxiety. The precipitating causes, however, may be failure in examination, loss of near and dear one, separation from home or loss of job. All such factors disturb the mental balance or equilibrium of the individual, leading to the symptoms indicating anxiety. In young children, loss of mother or long separation from her produces feelings of insecurity which is also produced by indifference or the attitude of rejection on the part of father or mother. The fear of losing either parent is noted to have produced insomnia, enuresis, loss of appetite or some such physical symptoms.

Intimidation or domination where the child is having diffused sense of fear of being killed or being done away with produces an anxiety state. In like manner a more sheltered and indulgent upbringing also makes a child insecure. If a parent has given the child the anxious care and attention by shielding or protecting him too much and by declaring him as weak, sick or delicate, from the very beginning, the child begins to think that there is something really wrong with him and this nervous and anxious attitude of the parent, particularly the mother, is absorbed by the child and he begins to be anxious about himself.

Sometimes anxiety is produced by the sense of guilt produced by the conflict between the ego and the super-ego when any of the unapproved desires or impulses are given a chance of satisfaction by the ego. The super-ego then inflicts punishment on the self, as it were, in the form of remorse and this produces anxiety leading to any of the symptoms mentioned above. For example, there was the case of a girl who was suffering from nausea and vomiting; she was jealous of her brother and she felt a sense of extreme guilt in asking her parents to put her brother in one particular school where she knew the boy will not learn much and will remain rather backward. This rivalry or sense of jealousy of the brother produced a sense of guilt in her mind and she had the spells of anxiety states due to the guilt feeling of being rather cruel and unfair to her brother. In a similar manner certain children who are used to masturbation also feel guilty and consequently suffer from anxiety. They may have disturbed sleep at night or may get up frightened through dreams of fear like being chased by animals or some frightful strangers.

Thus we find the parents and teachers have to be very cordial as well as alert when dealing with children. Without their knowing they may cause lasting damage to the personality of the child.

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The fundamental urge of life is to exist and to grow: every living creature has the inner impulse to grow to its full stature and to be its best self unless it is thwarted by the exigencies of outer conditions. This fact is found to operate equally in plant life and in animal life, including human life. All events of living beings, in fact all cosmic events, are regulated and controlled by certain rules and regulations or natural laws. Nothing in nature is capricious or whimsical; otherwise instead of a cosmos there would be a big chaos. There is a system everywhere and the flow of the life current is controlled and regulated by certain laws. Such a mode of life in accordance with certain rules may be termed as disciplined life. Discipline means life organised or lead according to rules.

But the question arises whether the individual is free in himself to follow any rules of his own, or in other words, has he the licence to do any thing he fancies or which is the creation of his moods and impulses? It does not seem to be so. If it were so and if every individual being were free to follow the momentary moods and impulses or self-made rules, there would be the law of the jungle and anarchy. As there are so many beings and as the wishes and impulses of one will come into clash with those of others it will only lead to destruction. Such a view of unbridled and absolute freedom is not warranted even by nature as under such conditions life will come to a standstill. Certainly in a society this is impossible if every individual on the road, pedestrian, cyclist, vehicle driver etc. were to move on the road on any side and in any manner he liked, the result would obviously be the stoppage of the traffic and all life on the road would come to a stop. Unchecked and complete freedom is not in the interest or the good of the individual himself or the society. Nature has put limitations on us and animal desires and impulses in living beings have to be controlled and regulated, otherwise one is led to one's doom. One cannot, for example, go on indulging in the satisfaction of hunger, lust and such animal desires indiscriminately and freely as illness caused by exhaustion or by poisoning may result in death. For the mental and physical health of the individual, therefore, reason has to come in to play its part in putting a check on animal desires and impulses. In a similar manner, for healthy social life certain rational codes of conduct, rules and regulations have to be instituted.

The rules and regulations both for the individual and social life should not be forcible impositions from outside. The individual and social living is not to be directed by any outside authority which is not a partner, and who has no share in such a living. Rules and regulations given by outside authority may in some way lead to order or discipline but such an order or discipline will be dictatorial or authoritarian and such rules and regulations will not be assimilated by the inner being of the individual and will produce indigestion, as it were, since they are forced down the throat of the individual without his understanding and cooperation. Social and individual life have essentially to be according to certain rules and regulations which are accepted by the person or persons concerned who identify themselves with the purpose of such living and who know their best interest. Man-made rules, therefore, which emanate from within the individual for his self-regulation and for being his best self or from the group itself for proper control of group life and group functions, will really be for true disciplining. There is no contradiction in following such rules and regulations and being truly free. Sometimes discipline is called as the gateway to freedom which means that to be really and truly free we have to follow certain rules and disciplining situations. In order to come out e. g. from a room into the open compound outside, we shall have to willy-nilly come through the already ordained and regulated provision of a door and not to butt our nose against the wall. The passing through the door in order to come out into the open is metaphorically explaining the dictum that in order to be truly free we have to follow certain rules or to pass through disciplining situations and be disciplined.

The above brief statement brings out the meaning of what we mean by discipline. It is neither the following of one's whims and impulses nor to be directed or goaded by some external authority. It means training, learning and living in an organized way, in accordance with rules and regulations which are constituted by the persons concerned and which are in the best interest of their mode of life. Such rules, are warranted by the true nature of the individuals themselves and emanate from their own beings. For this reason discipline really speaking is not an imposition of extraneous rules and regulations but is the self-imposition of self-emanating rules and regulations in the following of which the true nature of the individual manifests itself and one becomes his best self. True discipline, therefore, really means self-discipline, and it is for the individual to acquire knowledge, habits, interests and ideals which conduce to his well being, that of his fellow beings and that of the society as a whole. Such an acquisition, of course, is helped by the others who live in close and benevolent relationship with the individual.

In various fields of life the word discipline is in ordinary parlance used and individuals are, so to say, disciplined in different

ways by making them to follow, certain rules for a specific mode of conduct and for a specific social purpose. The soldier, for instance, is disciplined for the military purpose and for warfare with specific training in the use of arms and with physical exercises and drill so that he is fit in body and mind. Such disciplining of soldiers is by following the command of superior officers for fighting the enemy and for being ever ready to defend the country.

We also hear of the disciplining of monks and nuns or similar religious personnel for monastic system or for religious missions. These religious missionaries are disciplined or trained in a specific order by making them to follow certain rigorous rules of conduct, study and the performance of rituals.

The disciplining of mind by rigorous study of classics like Latin, Greek, Mathematics, Grammar, Rhetorics etc. has also been advocated and practised from olden times. Such intellectual discipline by tough study and formal instruction has given another meaning of the term discipline different from the discipline of a soldier and the like for a specific purpose.

But, the word discipline has had wider significance and has been used more often in the field of education. The word discipline is derived from the Latin root "Discipulus" meaning pupil or disciple. A disciple is he who learns and discipline literally means the process of learning and training which is for some specific end. The disciple submits himself voluntarily to the preceptor to have restraints which he knows will be good for his specific objective. In ancient India the preceptor or the teacher or the *Guru* had a number of his disciples or *Chelas* who identified with the *Guru's* aims by virtue of an intellectual and aesthetic fellowship between them, had the *Guru* directed them for the specific attainments for which they sought his guidance. In ancient India education was thus a great discipline which the pupil was to acquire in close relationship with the preceptor who most often worked as a paternal benefactor by understanding the capacity and the ability of his disciple.

The Greek Philosophers and the Jewish Rabbis had their disciples and so also the founder of Christianity. But mostly in the middle or dark ages instruction in schools became rather a cruel affair. With the Egyptians and Jews the rod was the means of discipline in schools. Among Christians the attitude was still stiffer and the teacher resorted to the rod too often as directed by the old Testament. Such cruel practices in schools in those days, in particular, were mostly due to the Christian conception of the fallen nature of man as it was considered that the devil in children was the cause of their waywardness and it could only be driven away with the help of a rod. The Christian educators believed in

curbing the natural urges of the child and education was to them essentially to break the will of the child with the help of the giant strength of the teacher tyrannically used.

In the pre-Victorian and even to some extent in Post-Victorian era in Europe discipline required obedience and a good teacher was a good disciplinarian who could wield authority to compel submission. There was then a 'moral-muscle psychology' as it were *i.e.* to train the pupil for obedience with the help of a rod or whip.

Such a discipline in schools was authoritarian when the head of the school and teacher behaved like a monarch and the use of rod was so common. The teacher was a despot and flogging had been in vogue even in public schools. Flogging was done even for omissions or for asking a question. Norwood said that flogging was done to boys who were even not known to teachers and when the reason for flogging was not known. Gladstone was flogged at Eton. There is the record of Mr. Grant in his dressing gown with a whip at the Nursery breakfast table compelling children to take cold milk which they detested and when they longed for hot porridge.

Such authoritarian approach in education and discipline remained in vogue for quite some time. The arbitrary will of the teacher and outside force broke the unity of the child's life and his social and moral growth was disturbed. Under such authoritarian instruction in schools no abiding and permanent gains resulted. The teacher did not touch the inner springs of conduct and he at best only treated the symptom and not the disease. He only instructed but did not educate. Having a license for absolute freedom he made himself a nuisance by ignoring the rights of children.

No child should ever be made to feel that by his behaviour he has forfeited the goodwill and love of his teacher or parent. He may be condemned but should still be loved and exhorted to be better. That will help him to do better. The teachers should take the attitude of a physician towards children and then alone will they understand them and rectify their errors. If a child did wrong it has to be rectified not by force but by the child himself undoing the wrong. Control on the child has to be exercised through a knowledge of his interest and by sympathy and his personality has to be respected.

There was, however, a revolt against the cruel and authoritarian approach to children in school. This was led by a number of educationists and writers. Montaigne *e.g.* in the 16th century, opposed the use of the rod and strict discipline. He advised that if one wished a child to be sensitive to shame and chastisement one

should not harden him to that by flogging or beating. Ascham and Erasmus held similar views. Martin Luther—the founder of protestant faith rose in revolt against these abominable practices and said that the teacher of that age only knew how to beat and torment his pupils and the schools were nothing but so many dungeons and teachers were tyrants and jailors.

Comenius (1592-1670) said that striking a child was akin to a musician striking his instrument for producing a tune. Later Roussou (1712-78) cried, "O man! be human. Love the child, encourage its sports, its pleasures, its amiable instincts." The child is an organic growth, it is developing from within." These views were further followed and elaborated by a number of educationists, like Froebel, Pestalozzi, Montessori, Dewey and others. Froebel, in his Kindergarten movement during the last decade of 19th century, insisted on taking care of the child's interest and his growing capacities for his education. This emphasis undermined artificial external and formal control by authority and the force of the teacher. Children were to be treated like growing plants and the teacher should look upon himself as a gardener who would look after their growth with benevolent care by providing them the essential ingredients for their growth instead of smashing them with a rod. Authoritarian discipline had no place in the education of the child in the Kindergarten movement of Froebel.

Montessori also thought that left to themselves under the supervision of the teacher or "Directrice" to go their own way at their own speed, to choose their own task and to be their own critics, the little children acquire initiative self-reliance and power of concentration. They learn self respect and respect for others and become more serious, purposeful and industrious than children taught by traditional methods, where the teacher functioned as the law giver. The traditional method of class instruction provided no scope for individual capacities and abilities to be actuated and encouraged and the teacher treated the slow and the quick learners in the same way.

Care for the individual's specific capacities and pace of learning was more emphasized in the Dalton plan initiated by Helen Parkhurst in which the assignment system was the central core. Each individual pupil was to work on individual assignments given to him in accordance with his attainments and power of grasp and learning.

Some of these progressive views on the education of the child challenged the older educational traditions and authority of parents and teachers and these views brought out the importance of entrusting school studies more to children themselves who were to make progress at their own optimal speed. The methods of teaching and learning were to be made more flexible in order to meet individual needs.

Some of the enthusiasts for self expression and freedom for the child (taking help from Rousseau's idea that the child was born free and that he was to be left to himself to develop rightly and also taking a hint from Montessori that children should be left to themselves without being interfered with by the teacher), advocated the theory of 'Laissez Faire' in education and in school discipline. They overshot the mark and the pendulum swung too far and the policy of "do as you please" was advocated. For instance, people like A. S. Neill gave children complete freedom in the school to do as they liked and to come to the school if and when they chose and followed the course of study or activities according to their own desires. Such a practice of complete freedom to the youngsters led to chaotic conditions; juvenile lawlessness and crime increased in America and France. There is no such thing as absolute freedom and unqualified self expression. Nature also limits our freedom. Absolute freedom would really be the freedom of a rooted tree as pointed by D. H. Lawrence. In society we have social barriers which cannot all be broken and destroyed. No individual can possibly lose his social moorings if he wishes to be really human. If one has his social roots dug out by breaking all barriers he will be like the up-rooted tree on the roadside which has to decay and die. Some checks and barriers to keep the individual on his feet are essential lest he is blown off like a straw. There should also be freedom from tyranny of lower passions and desires. In school life the range of freedom cannot be wider than in the outer world. The child is mature, ignorant, weak and helpless and has to look to the superior for guidance, encouragement and help. He has desires, impulses and passions, which can ruin him and which need to be controlled and such a type of control is to be learnt by him with the help of the benevolent elders, in particular, teachers in the school. So it will be dangerous to ignore the place of the teacher in the realm of conduct and intellect. Teaching must have a definite place and the teacher cannot be reduced to a cipher. Even Montessori did not consider a teacher as a passive on-looker. To her, the teacher was an active observer and a supervisor of children who directed and guided wherever and whenever necessary. Complete freedom to children is for their doom as it were, since they are too small to decide for themselves and to be left entirely to their own resources. The dictum of G. K. Chesterton 'that to think that salvation does not come from outside is a blunder' is very true in the field of education. The teacher as a friend, guide and helper has always to have an eye on the child to watch his progress like a gardener tending the plant by protecting it from too much heat or cold, water or draught. Reducing the teacher to a nonentity is as harmful and dangerous as making him a despot with a cane in hand to rule his kingdom of the school.

Both authoritarian and Laissez-Faire approaches to discipline in schools are, therefore, erroneous. There has to be a synthesis of

freedom on the part of the individual child and disciplining by the teacher in the school. In such a synthesis the pupil and the teacher, the educand and the educator are partners and co-workers. The school is really a democratic social agency as emphasized by John Dewey. In such a democratic society opportunities are provided for all-round development and the tasks are carried out at the pupil's own desire in cooperative participation. True discipline, therefore, lies in neither following one's impulses and desires, nor in being goaded by the external authority. Discipline is inherent in the relation of the members of the school society in pursuit of common ends. The whole of the pupil's life in school for physical, intellectual, social and moral development carried out in cooperation with others and directed towards the realisation of certain purposes, is the essence of discipline.

The object of discipline in school, therefore, is to train the child in those virtues, sentiments and habits which fit him to be a good citizen and a good man so that he loves and does things which society values most and without which society disintegrates. The society which has honesty, fair-play, mutual consideration for others and virtues like faithfulness, trustworthiness among the members is a healthy and happy society ; a society which has selfishness, cheating, distrust, dissension and such other diseases is bound to decay. From the point of view of the individual and of a healthy society, therefore, it is essential that certain non-social tendencies like greed, aggression, anger, hatred etc. are controlled and checked and adjusted to the social purposes. Educators in the schools should have clear idea as to what qualities they wish to produce in children in schools. The child has to be helped to acquire such social qualities and to have self control in order to be in harmony with the life inside and outside the school. Such a self-control will be developed by social participation in play, games and other co-curricular activities and self-government in school.

Children, therefore, have to learn the lessons of self-control in their own interest and in the interest of others. This means that discipline will have to be exercised by the adults who are responsible for the development of children and self-discipline is to be acquired by proper assumption of responsibility by the young who have to be wisely controlled by the teacher. Self discipline develops through firm but kind disciplining by others with the opportunity for gradual assumption of responsibility for one's own behaviour. This is made possible in a democratic atmosphere created by the teacher in the school or in the class room where instead of assuming absolute authority of a despot the teacher is a participant and co-worker with pupils in the common task.

It has been experimentally proved that in a democratic atmosphere created by democratic leadership of the teacher (where the teacher actively participates and where he comes down from his

pedestal and freely mixes with children for guiding them in the activities of the class), there is more efficiency shown by children and there is more interest in work, abundant friendliness, mutual praise and constructiveness. Children become more free, responsive and cooperative, with initiative and confidence in their work. Under the democratic leadership of the teacher the same children emerge as personalities each making a definite contribution to the total behaviour pattern, whereas authoritarian social climate created by the domineering teacher gave rise to mere external conformity to the rules imposed by the teacher. The democratic treatment of pupils made them responsible persons with self-confidence, emotional stability and sense of security. The democratic atmosphere afforded opportunities for making responsible contribution in the group activities and it provided means of satisfaction of the basic psychological needs of recognition, belongingness and acceptance by the group. The democratic approach was noted to prepare the child for group living to study questions and make one's own decisions. Under such an influence one acquired emotional self-control and had the right will to make the right choice which really meant acquiring proper discipline, or self-discipline.

The classical experiments in this connection for instance of Lewin, Lippitt and White and of other workers like Anderson and Bavelas have brought out that the dictatorial method of class handling leads to aggressiveness and prevents habit of independent thinking and taking initiative. Under dictatorial influence there was very little interest in work and this approach on the part of the teacher produced more dis-harmony and lack of understanding among pupils. It prevented the child from developing self-reliance, independent thought and the co-operative attitude. Similarly under Laissez-Faire attitude on the part of the teacher (when children were left completely to their own resources) there was found to be more idleness and frustration. Children under such a condition, not being aware of any coherent purpose, showed more anxiety and bewilderment. The morale of children under authoritarian and Laissez Faire leadership of the teacher was found to be low, there was heightened interpersonal irritability with little conversation but long periods of silence.

These studies bring out that for proper intellectual, emotional and social development of the child the social atmosphere which teachers create in the class is very effective. Only under the permissive, integrative or democratic approach on the part of the teacher (when he himself is the participant and a sharer in the class activities) are children helped to acquire responsibility, self-confidence and control on their drives and emotions; in short, to have proper discipline. Such democratic attitude is to be adopted by teachers when they function as benefactors, friends and guides of

children. This approach will also solve other problems of discipline in the class room and the attainment of educational aims will be very much facilitated.

The aim of education has been variously understood. Arnold of Rugby, for instance, wanted the Rugby boy to be a Christian gentleman. Tom Brown's father wanted the boy to grow up into a brave, honest and true-speaking English man. The aim of education has been considered by some as producing a cultivated intellect or cultivated moral being. Bacon's idea of an educated man was one who could magnanimously fulfil both the offices of peace and war. There is no use dilating on the aims of education. Suffice to say that the human being having his physical, intellectual, social, moral, emotional and aesthetic aspects has to grow harmoniously all round to be his best self by becoming efficient and constructive in his work, adjusted in his social relations and at peace with himself. Such a purpose of education will be very well fulfilled and the aim well realized if the child is subjected to the disciplining situation under democratic social climate created by the teacher in the class-room as mentioned above.

For creating proper disciplining situations in the school where the child will be enabled to acquire self-discipline it is essential that the teacher is well read. He has to know his subject thoroughly to create interest and inspire the pupils who will begin to take the class work seriously and will find purpose in their academic pursuits. In the second place the methods of teaching have to be such as afford individualised instruction and individual attention so that the pupil is not lost in the crowd and is able to find his interest and to work according to his capacity. In the third place, although rewards and punishment under ideal conditions of training are not essential as human beings are not merely hedonistic to be motivated only to avoid pain and to gain pleasure, yet judicious use of praise and blame or reward and punishment goes a long way in making the child see the reason underlying his behaviour and to feel confident in his achievements. In the fourth place children will acquire control over themselves for self-discipline through opportunities for extra-curricular work. Self-control is developed by social participation in play, games, dramas, debates, and such like co-curricular activities: self-confidence, initiative self-respect and consequently respect for others are all fostered among children by self-government in schools. Children should have a say in the management of their own activities and in fact they should be encouraged to organise their own school activities or functions. The sense of responsibility, worthiness and cooperativeness will be fostered when the children are assigned responsible roles as they will feel that they count and that they have their own place in the school community.

For proper discipline there should be a well coordinated scheme of work in the school time table, celebrations of important events, class projects or activities, excursions etc. should be all coordinated and pre-planned so that children are habituated to methodical way of doing things. Unless they have been carried through methodical and properly arranged series of activities, they will not acquire a method in their life and work and they will not be properly disciplined.

The role of the Headmaster or the Principal of the school in the disciplining of the children cannot be ignored. The head of institution has to be a scholar, a person of deep understanding and insight with humility and humanity. He has to be a benevolent elder presiding over the functioning of the school and capable of forgiving and forgetting and yet a man of firmness, quick decision, will, and imagination. His presence should inspire confidence and a sense of security in the minds of the pupils and the teachers. He has to be impartial and objective with a devotion to duty, industry and conscientiousness. Discipline in the institution will be of high order under the leadership of such a head and many a school is made or marred by the personality of its headmaster.

Another factor which is helpful in the proper discipline in the school is concord, harmony and mutual understanding among the members of the staff who have to work like a team as a band of devoted missionaries, identifying themselves with the purpose of the school. They have to maintain a respectable distance with pupils, though being democratic in their approach. They need not get completely mixed up with children or get themselves involved in their personal problems. They have to be objective, impartial and detached with no undue favours shown to any particular pupil or pupils. They should not speak in different voices or have contradicting cross currents opposing one another or forming petty groups. Discipline will be well maintained in an institution where pupils do not have the impression of rift among the staff members.

Finally, it must be stated that the level of discipline in the schools reflects the level of discipline in the society at large, particularly in the democratic institution like the village panchayat, Taluk or District Board, state legislature and the national Parliament. The school is not an isolated or an insulated institution. It is a part of the social fabric. Just as the teachers cannot expect discipline among the students if they are not themselves disciplined in the same way the parents and citizens cannot expect discipline among the students if they are not themselves leading a life of self-restraint and self-discipline.

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I. NATURE AND PHILOSOPHY OF GUIDANCE

What is guidance ?

Guidance is the process of helping a person with his adjustment problems. An adjustment problem arises when a person confronts a demand made by his environment which he cannot fulfil. Adjustment may be described as a state of harmony between the needs, abilities and resources of a person on the one hand, and the conditions obtaining in his environment on the other. Absence of harmony between the two creates a problem of adjustment. The harmony can be brought about in one of two ways. First, by changing the conditions in the environment ; second, by modifying the state of the person. The first process has been described as 'aloplastic', that is, changing what is 'other' to the self, namely, the environment. The second process has been called 'autoplastic', that is, modifying the self or the person to suit the conditions of the environment.

A child is attracted by a doll possessed by another child. The need to possess the doll is not in harmony with the environment as the doll is in possession of the other child. The child adjusts to the environment by snatching the doll from the other child, if the other child happens to be weak and timid. The environment gets into harmony with the child's yearning to possess the doll by changing from the one 'with the doll in the possession of the other child' to that 'with the doll in the possession of self.' This mode of adjustment is aloplastic.

May be, the second child is stronger and is not prepared to give way to the first child. A battle ensues between the two and the second child successfully repulses the attack by the first child. The first child starts crying, or surrenders and shows friendly gestures to the second. In either case a change has taken place in the state of the first child himself. The 'attack' has changed into the 'cry' or the 'desire to possess' has changed into the 'wish to share'. The adjustment is autoplastic.

The problem of adjustment arises every day in the life of an individual. The environment is in a state of constant flux. The individual too is changing every moment. The harmony between the two is also being constantly disturbed. Change affects the outer environment of man. His internal environment is also in a

state of flux. The bodily tissues are forming and unforming every moment. This is the biochemical process of metabolism. The metabolic process of building up and breaking down causes surpluses and shortages. The deficiencies or shortages are made good by taking in new ingredients. The waste-products and surpluses are eliminated. The body thus maintains bio-chemical level. Whenever the constancy is disturbed either by a shortage or by a surplus, the restoration of the constancy is automatically brought about by the body's own action. For example, the blood contains a fixed average concentration of blood sugar. If there is an additional in-take due to the excessive consumption of sweets, the surplus is automatically drained out. Similarly, any shortage is supplied by the starch or carbohydrate content of the normal food. This principle of the automatic restoration of the body's constancy by the body's own activity has been termed *homeostasis* the tendency of the body to maintain its normal bio-chemical level. (10 ; 100-106).

In normal health, the body performs its metabolic function automatically. But in disease, its power to restore its chemical equilibrium is reduced. The individual needs medical help.

In a healthy body, adjustment to the changes in the internal environment is an automatic process. Nature has endowed man also with the power to adjust to the changes in his outer environment. The capacity for adjustment grows with the process of maturation and with the acquisition of knowledge and skill. Learning, whether formal or informal, is the process of developing new, complex and refined modes of adjustment. Intelligence is, perhaps, man's special gift for evolving new patterns of adjustment to the ever-changing circumstances of his life. But just as a man sometimes finds himself in the need of another person, a medical man, to secure his normal chemical balance and to regain his capacity to adjust to his internal environment, also experiences, at times, his inability to adjust to his outer environment and seeks the help of another person. Guidance is the help one person renders another in adjusting to the peculiarities of his environment.

We might draw another parallel between guidance and medical service. An efficient medical service aims not only at the cure of a disease but also at the prevention of future diseases. A bad doctor only tinkers with his patient's symptoms; he seeks just to supply the deficiencies in the body by artificial means. A good doctor, on the other hand, aims at correcting the mechanism of the body so that the deficiencies may be made up automatically; the biochemical balance may be restored by the body's own action and not by the process of medication. Otherwise the moment the treatment is stopped, the body is faced with the danger of again developing chemical imbalance. The person may be a victim of other diseases.

As mentioned earlier the body's intake of vitamins, minerals, carbohydrates and other chemicals and its maintenance of these at a constant level are effected automatically in the course of a person's normal life. The body possesses the power to perform these functions itself. A disease is the impairment of these functions. A real medical help should restore to the body its capacity to perform these functions. The treatment is effective when the body can again take care of itself and adjust to the constant changes in its internal environment. A good treatment should reduce the need for future treatment. A good guidance, likewise, should reduce the need for future guidance. Guidance should, accordingly, aim at developing in the individual the capacity for self-guidance and self-direction. An efficient guidance service should bring about the conditions so that the individual may be able to understand and appreciate his own potentialities, take stock of his own resources, make self-directed efforts for their growth and enrichment, and ultimately assume full responsibility for his own life and adjustments.

We should not carry the parallel between guidance and medical service too far. A physician examines his patient, diagnoses the disease and prescribes the treatment. The prescription is the direction that he gives to the patient both about the medicine to be used and the diet to be taken, where necessary. The physician does not consider it his responsibility to explain to the patient how he arrived at the diagnosis and why he has prescribed the particular medicine. If the patient observes the directions, the outcome of the treatment is the major responsibility of the physician.

It may be thought that guidance too is an analogous process of prescription or direction which is followed by a diagnosis of the individual's condition and that bearing upon his problem. The responsibility of the guidance worker, it may be supposed, consists in ascertaining the abilities, aptitudes, needs and resources of the individual and directing him to a course of action that is most likely to bring about a solution of his difficulty. But this is not true. Good guidance, as suggested above, is a help rendered for the purpose of developing in the individual the power to take self-direction and to assume full responsibility for his own life and conduct. Guidance cannot, therefore, be equated with direction or prescription of a ready made solution. Such an approach strikes at the very root of the individual's capacity to achieve self-determination and assume mature self-responsibility.

"Guidance is *not* direction. It is *not* the imposition of one person's point-of-view upon another. It is *not* making decisions for an individual which he should make for himself. It is *not* carrying the burden of another's life. Rather, guidance is *assistance* made available by competent counsellor to an individual of any age to help him direct his own life, develop his own point of view, make his own decisions and carry his own burden" (2 ; 6). "Gui-

dance is no mechanical process, whereby counsellors and teachers sort out boys and girls as a grading machine sorts apples—this one to stay on the farm, that one to work in an airplane factory, this one to be a teacher, that one to run the local garage. Guidance is rather the high act of helping boys and girls to plan their own actions wisely, in the full light of all the facts that can be mustered about themselves, and about the world in which they will work and live". (3 ; 39-40). We have a simple, but very practical definition of guidance as "helping John to see through himself in order to see himself through". (15 ; 12)

Guidance involves a twofold process, the process of developing in the individual an understanding of his own conditions, his assets and liabilities, his strengths and weaknesses, and the process of assisting the individual to understand and ascertain the demands and influences of his environment and the opportunities offered by his environment. Guidance, further, involves the process of helping to relate the two types of data—the facts about one's-self and the facts about one's environment, and to work out an appropriate course of action. In the context of vocational guidance, Super describes the guidance process as one of "helping the individual to ascertain, accept, understand and apply the relevant facts about himself to the pertinent facts about the occupational world which are ascertained through incidental and planned exploratory activities." (16 : 2).

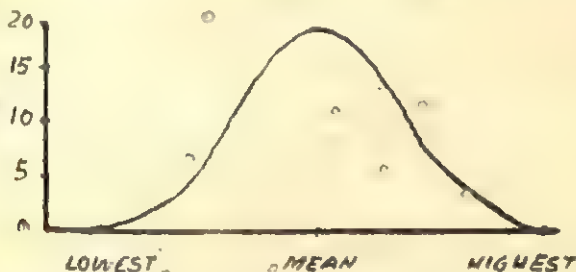
The Philosophy of Guidance.

The philosophy of guidance is founded on one basic discovery of psychology, namely, the fact of individual differences. Individuals differ as adults, that is, after having attained maturity. In fact what knowledge and skills an individual is found to possess are very largely determined by factors that have influenced him from his early infancy. There are strong reasons to presume, further, that some of these factors are even pre-natal, and may be treated as inborn. Their unfoldment and growth are stimulated by the environment, but they are not just the products of the environment. The most outstanding among these factors is the all-round cognitive ability or intelligence. The intellectual growth of a child has a basis which is very similar to that of the physical growth, dimensions of which are more or less determined by the properties of the germ cell. The size and structure of the limbs, the form and complexion of the body, etc., are predetermined by factors that are inborn. Similarly the level and type of growth of intelligence reached by an adult are, more or less, predetermined by constitutional factors. The basis for most other human characteristics as well can be traced to the early infantile life of an individual. Most of the differences among persons that emerge later are foreshadowed in the differences that can be marked in early infancy.

If all persons had similar potentialities for growth, to begin with, the matter about their education would have been much simpler and guidance would have really meant direction. The human material could be fashioned into any shape that one desired. The same child could have been made to become a painter, a musician, a machinist, a poet, a play-wright, an architect, a mathematician, according to the will of his educator, or perhaps, of the society. But the fact of basic individual differences has proved such a notion to be false.

There is one aspect of individual differences that was first pointed out by Bingham (1 ; 25-32) but has not been as fully elaborated as it deserves. Differences exist not only between persons, but also within a person. We can compare as we do, not only different persons in respect of a particular characteristic, but also compare the different characteristics exhibited by the same individual, since he does not possess all of those characteristics in the same degree of excellence or otherwise. When we conceive of genius as an embodiment of all strengths without any weakness, we keep in view only the superior traits of the genius and develop a notion that the genius is *suigeneris*. In fact, a genius has the uncommon gift of only one or two characteristics ; in respect of his numerous other characteristics he may be just mediocre.

When we discuss individual differences we talk at length about the normal distribution of any given characteristic in the individual composing a group. What we mean is that only a few persons exhibit the characteristic in the maximum amount, and only a few persons exhibit it in the minimum amount ; most persons possess the characteristic in the average amount. The normal, bell-shaped, curve describes this fact by starting at one end with a very low height, gradually rising to its maximum height, the apex, and then descending at the other end to a level comparable to its low initial height (Fig. 1).



Scale of Measurement of a characteristic in a group of Individuals

Fig. 1.

The differences between the various abilities within a person may also be presumed to distribute themselves in a similar manner. We might think of the characteristics found in an individual to be

located, in respect of their magnitude, along a scale of values that extends from the minimum, or the lowest possible amount, to the maximum, or the highest possible amount. Some of his characteristics would, thus, fall near the lower end of the scale as he possesses them in a small negligible amount. The number of such characteristics will be very small. Some of his characteristics would fall near the higher end of the scale as he possesses them in the highest possible magnitude. The number of such characteristics too would be very small. Most of his characteristics would fall near the middle position on the scale since he possesses them in just average amount. The number of these characteristics would be the largest (Fig. 2).



Scale of Magnitudes of the characteristics possessed by an Individual

Fig. 2.

If the above distribution of the characteristics of a person is proved to be a fact, then the conclusion is inevitable that every person has got a few remarkable weaknesses, a few remarkable strengths, and finally, that he is just mediocre in respect of many of his qualities. Guidance is then a process of helping a person to explore and discover his special strengths and weaknesses, his talents and deficiencies, in order to prepare a balance sheet of his assets and liabilities, and to utilize this knowledge in planning his course of life and action.

Guidance and Education.

It is obvious that the fact of differences between the various abilities within the individual is more pertinent for guidance than the fact of inter-individual differences. The former inspires the guidance service with the faith that every person has a potential value for himself and for society. No person is without some worth. No person is ordained to be a burden on society. Society, therefore, owes a responsibility to provide to each child an opportunity to explore his talents, to develop them to the full measure of their growth, and to utilize them in the service of the self and of other human beings. Guidance fulfils the first responsibility as it aims to help a person explore, understand and accept himself. Education fulfils the second responsibility as it aims at providing conditions for the maximum unfoldment and growth of a child's potentialities.

The ideals of a welfare state fulfil the third responsibility by creating the opportunities for each person to make use of his knowledge and skill for the well-being of his own self as well as of the society. Guidance, mass education, and the ideals of a welfare state are inter-linked elements of the larger scheme of uplift of masses of men which alone can save human society from annihilation. The organisation and administration of each—guidance, education and opportunity for work, is to be reflected in the organisation and administration of the other.

The processes of guidance and education are not only inter-related; in a sense, they may be considered as identical. The objectives of education have been broadly stated as (1) self-realization, (2) human relationship, (3) civic responsibility and (4) economic security (17; 4). Fulllest realization of the potentialities of the individual child so that he is endowed with the maximum possible power of accomplishment and success in the realm of human endeavour is the immediate goal of education. Education also aims at the development of such traits, dispositions and habits in the individual that ensure happy and harmonious social living. Inculcation of the sense of civic duties and responsibilities, with the urge to fulfil them, is the other end towards which the educational process is directed. In addition, the fourth objective of education is also being emphasised in modern times, namely, economic competence and economic security. The educated person should develop the maximum capacity to work for his own economic amelioration as well as to contribute to the increase of national prosperity.

Guidance also aims at the furtherance of similar ends. 'Guidance aims at awakening the child's potentialities and talents, providing a suitable psychological climate for their unfoldment and growth, and developing maximum capacity in the child to mobilise his resources and make the best use of the opportunities offered by his environment in order to achieve utmost personal and social efficiency". (7; 1-2) "Guidance..... is an attempt at providing such psychological conditions for the individual pupil that contribute to the development within him of that capacity for self-direction and freedom of choice which ensures the realisation of personal prosperity and happiness as well as brings about the fulfilment of the ideals of social usefulness and corporate living" (7; 3).

We are merely elaborating the objectives of education when we talk about the three broad aspects of guidance, namely, educational, personal, and vocational. Educational guidance is the process of help rendered in removing the impediments to the growth of the pupil's abilities and powers to full maturity. In more concrete terms, educational guidance helps the pupil in ascertaining what should be the right educational choice for him and how best he can adjust himself to the same. Personal guidance helps the pupil to discover

his angularities and to iron them out, to achieve a real insight into what he is and what other persons about him are, to build up self-confidence and courage in order to cope with life's realities and problems. Equipped with the knowledge, the understanding and the will, the pupil is enjoined to achieve a level of emotional and social security and balance that would ensure a harmonious social life as well as develop a sense of social justice and civic responsibility. Vocational guidance helps the adolescent to choose an occupation best suited to his abilities, aptitudes, interests, personality characteristics, and circumstances of life, prepare for the occupation, enter it, and achieve success and satisfaction in it.

Special need for guidance.

The need for guidance has existed at all times. But the conditions that are today emerging in this country, as well as in the other parts of the civilised world, have intensified this need considerably. Some of the conditions may be stated as follows :—

1. *Increase in the range of individual differences between school-going children.* A decade back, boys and girls came to school only from the more privileged section of society. With the growing facilities for education and the drive for mass education, we find our average schools packed today with children from every section of society. There has been a tremendous increase in the number of schools during the post-independence period, both in the rural and urban areas. The result is that we find today a much wider range of differences in the abilities, aptitudes, interests, goals and aspirations of pupils. Adjustments of the educational programme of our school to this wide range of differences requires an increased understanding of the differential needs and abilities of individual pupils. This is possible only through the introduction of a specialised guidance service in the school.

2. *Change in the objectives of education.* We are being increasingly influenced by the importance of providing a type of education that can contribute to the development of the whole child. We no more urge for a type of education that aims merely at imparting knowledge and helping the growth of the intellectual faculties of the child. It is now commonly accepted that education should also lead to the promotion of the emotional, social, and civic life of an individual. The educated person should be a well-adjusted, happy and useful member of a democratic society. This end can be fulfilled with the individualisation of the process of education, by shifting the emphasis from the 'class' to the 'pupil'. The average teacher, therefore, specially needs an expert service in the school that can inform him about the individual needs and potentialities of the pupils and to which he may refer the day-to-day adjustment problems encountered by them. Thus, the introduction of the guidance service can alone provide for the conditions necessary to the

development of a well-rounded personality that modern education aims at.

3. *Increase in the offerings of the school.* We are committed in this country to a changed pattern of education which is aimed to expose all pupils to the same type of learning experiences up to the elementary stage, and to provide at the secondary stage for a variety of learning experiences according to the differences in the abilities and interests of pupils. At the secondary stage, the courses of studies have therefore to be diversified and to include several elective groups (12). Thus, in addition to the college preparatory courses, namely, physical science, social sciences and humanities, which alone featured in our erstwhile secondary schools, we are now having a good number of vocational courses, like commerce, agriculture, elementary engineering, arts and crafts, home science, and fine arts. These courses are designed to prepare a pupil to enter life on completing secondary education. The personal requirements, namely, the type and level of ability, aptitude, interest and personality characteristics, for successful completion of the various optional groups are not identical. A special type of service in the school that can help individual pupils in the choice of a course suiting their needs and abilities, and that can assist the school authorities in the proper allocation of pupils to the diversified offerings of the school, has become a crying need of our reorganised pattern of education.

4. *Increase in the complexity of the world of work is another important force.* Since the last decade our national developmental plans have brought about a tremendous increase in the variety of jobs. The National Dictionary of occupations compiled by the Directorate General of Resettlement and Employment gives a list of 3,000 occupational titles (11). With the further growth of industrialisation and mechanisation in the methods of agriculture, there will be a continuous further increase in the variety of jobs. Different occupations make a differential demand upon the ability, interest, and personality characteristics of the worker, as well as upon the type and standard of general education and training achieved by him. It is highly important, therefore, to acquaint the secondary school pupils with this kaleidoscopic variety of jobs and with their differential requirements. Special provision of occupational information and of assistance to the school-leaver in viewing the job possibilities open to him has become very necessary. All these call for the introduction of vocational guidance service in the secondary schools.

5. *The impact of industrialisation on the life of an individual.* The country is heading towards industrialisation in order to achieve optimum national prosperity. But industrialisation has its own social and emotional problems. By bringing in a great amount of urbanisation, industrialisation leads to the disintegration of the well-knit and secure unit of the village community. In the large industries, the individual worker becomes just a cog in the wheel of

an industry. He seems to belong nowhere. Having no chance to know about the contribution he makes to the product of the industry, his needs for creativity and craftsmanship ever remain unsatisfied. His status is undefined and he is in constant dread of losing the job. This creates in him a harrowing sense of uncertainty and insecurity. Constant mobility from the rural to the urban areas, robs the worker of the sense belongingness, status and emotional security he enjoyed in his village community. The stress and strain caused by industrialisation have their repercussions on the emotional and social growth of youngsters in the worker's family. With the parents working outside for their wages, the children are denied the security and happiness of family life. Their emotional and social needs remain unsatisfied. It is highly imperative that the school should provide some special agency that can look after the mental hygiene of the average school-going child.

6. *Man-power development and utilization.* Preparation of its human resources is as important for the planned development of a nation as the proper utilisation of its natural resources. It is also necessary to guard that the quantum of its skilled labour force is in proportion to the requirements of national development. Some direction has, therefore, to be supplied to the inflow of the labour potential in the various sectors of training of technical skills. In a democratic society such a direction cannot be imposed from outside. It can be best achieved only by adopting the guidance approach. A thorough acquaintance with the job opportunities created by developmental planning and with the trend of the employment market would incline boys and girls in desired directions. In addition, assistance, in the choice of a suitable occupation and preparation for it would ensure the supply and utilization of the trained personnel in accordance with the requirements of developmental planning. The guidance programme, thus, serves a very important national need in an under-developed country like India which is striving to become highly-developed and prosperous. The school is the only social institution where the direction to man-power development can be given on mass scale, specially when we have launched a drive for compulsory and free elementary education. The importance of a special guidance service in the schools can, therefore, never be overstressed.

II. GUIDANCE SERVICES

Guidance is a service rendered by one individual to another individual. A comprehensive guidance service has been classified into a number of parts each one of which may be treated as a special type of service. These services are detailed below :—

1. *Personal Data Service.* It consists of the activities involved in collecting facts about the individual to whom the guidance service is extended. The facts may be classified as under :

(a) *Background data.* These consist of facts concerning the family background of the individual, information about his parents and siblings, their educational, economic and cultural status, any peculiarity of the relationship between the members of the family, etc.

(b) *Physical data.* These cover information about the individual's health, any physical disability like defective hearing, impaired vision, poor physique, low endurance, major disease history, and so on.

(c) *Psychological data.* These may be classified under four broad heads:— (i) Level of general intellectual ability; (ii) special abilities or talents like mechanical, artistic, musical, literary etc.; (iii) special interests such as strong liking for social work, scientific activities, fine arts, music, etc.; (iv) usual pattern of social or emotional adjustment, such as sociableness, co-operativeness, aggressiveness, high irritability, feelings of inferiority, lack of self-confidence, shyness, nervousness, timidity, etc.,

(d) *Educational data.* These relate to such matters as school history, general level of scholastic achievement, special strengths or weaknesses in school subjects, special distinctions in extra-curricular or co-curricular activities of the school, etc.

(e) *Drive and application to work,* such as systematic or unplanned work habits, poor application of energy, low motivation for work, lack of persistence, etc.

(f) *Future plan and aspiration.* What course of studies or training programme the individual proposes to take up in the future. What vocation he is contemplating after leaving school or college.

The guidance worker has to tap different sources and adopt different methods for gathering personal data. He may obtain information from the person concerned, from his parents, teachers, school or college records. He may apply several techniques for gathering information, which we will discuss in detail in the sequel. The object of the guidance worker is to collect relevant information and to make sure that the information collected can be claimed to be comprehensive and accurate. With this end in view he uses all possible sources and techniques. One source or technique may supplement or add to the data collected from another source or by another technique. One source or technique may also check the information gathered from another source or technique and thus ensure the accuracy of the data.

2. *Environmental Data Service.* In school or college guidance programme, the environmental data include the facts about the educational and occupational opportunities found in the environment. They include details about the requirements of an educational course,

training programme, or an occupation. This requires of the guidance worker to collect information from different sources and by using several devices. He has to procure the literature on the variety of educational courses and on the multitude of occupations that are offered by private or state agencies. He has to classify and catalogue the materials, and store them in an accessible place. In addition, he may undertake surveys of the neighbouring areas and, thus collect information about the details of educational and training facilities, job opportunities, the employment market, the occupational trend, etc. In this manner, he supplements the information contained in the available occupational literature.

For making his surveys, the guidance worker may use the questionnaire method or the interview method. He mails his questionnaire to the employees or to social welfare agencies in the community. He analyses, systematises, and summarises the responses made to the questionnaire. He, thus, compiles the information about jobs available in the locality and about the trends of the employment market. Or, he personally contacts and interviews the employer or other relevant agencies and gathers relevant information from the interviews.

The environmental data service also requires of the guidance worker to use a variety of methods for the dissemination of educational and occupational information. In a school or college guidance programme, he may achieve this by delivering informal talks to a class and encouraging discussion about special jobs and careers. He may exhibit career films or display career posters specially prepared for imparting information about jobs. He may organize career conferences and invite representatives of different trades, business organisations, administrative agencies, the defence organisation, etc., to talk to the pupils about different types of jobs or work from their personal experiences. The talks may also be supplemented by exhibition of occupational literature, career films and posters. The purpose of all these activities is to bring home to the interested person the fund of information about educational and vocational opportunities and about their requirements, in an impressive and effective manner.

3. *The Counselling Service.* This involves the activities of presenting to the guidance seeker the two types of data, personal and environmental, and helping him in discovering the relationship between them. This would enable the individual to plan a suitable course of action for himself, one which is most likely to bring him success and satisfaction when put into practice. We will know more about counselling service in the sequel.

4. *Placement Service.* On receiving the needful guidance in regard to the suitable choice of an educational programme or a career, the individual may lack the resources required for the imple-

mentation of his decision. He may, for example, come to the conclusion that in view of his ability, aptitudes, interest, previous attainments and circumstances, the craftsman's training course would be most suitable for him.⁴ But he may still need some assistance in getting admission to the course. Whatever activities the guidance worker performs in rendering this sort of help fall in the category of placement service. This may consist of help in matters of educational placement or those of job placement. The guidance worker may assist the individual by getting him in touch with the admission authorities, he may contact the agency that might render financial assistance, if the cost of the training is beyond the capacity of the individual to meet, and so on. Similarly, after having come to a definite vocational decision, the individual may encounter difficulty in getting an entry into the job. Any assistance rendered by the guidance worker in this connection would also constitute placement service.

5. *Follow-up and Evaluation Service.* The functions of a guidance worker do not cease with the placement of the individual in a suitable educational course or in a suitable job. The guidance worker keeps himself available for rendering any help that may be required by the individual in adjusting to the course or achieving competency in the job. For this purpose, the guidance worker must keep a track of the persons he has hitherto guided. He should keep an eye on their future adjustment to the situations in which they are placed. In this sense, guidance is a continuing process.

The follow-up also provides an opportunity for the guidance worker to check the adequacy and effectiveness of the guidance service rendered by him. A person may be guided in taking his vocational decision and acting upon it. The extent to which he achieves success in the vocation would be a measure of the efficiency of the guidance to which he was exposed. If the job really proves to be unsuitable for him and, therefore, he is unable to achieve competence therein, the guidance service rendered to him has not only been ineffective but also unsalutary. Instead of doing good, it has done him harm. Unaided, the chances were even for him to make a better or a worse choice. The guidance worker can realise his failure only when he follows up the later adjustment of the persons he has guided.

Besides the follow-up, several other methods of research in the evaluation of guidance have been suggested in the literature (13 ; 261-284). Such research is very important since only this can decide the issue about the utility of guidance as a whole and about the efficacy of the various methods and tools used in the guidance programme. There can be no justification for the extra cost in terms of funds and resources, if the guidance programme of the school or college does not make a difference to further life and adjustment of those that receive guidance. Hence evaluation service should also be considered to be an essential element of a comprehensive guidance programme.

III. GUIDANCE TECHNIQUES

There are several methods or techniques used in the guidance programme for the purpose of gathering information about the person to whom the guidance service is extended. The techniques may be classified as : 1. Test Techniques 2. Observational techniques 3. Self-Report techniques & 4. Miscellaneous.

1. Test Techniques. A test consists of a set of standard stimuli which evoke such responses in the testee that reveal some well-defined characteristics possessed by him. The responses are quantified and the result is a test score that indicates the amount or intensity of the characteristic the test is intended to measure. The psychological characteristics that an individual possesses may be divided into five broad categories, each one of which is measurable by a test or a set of tests. We have thus (1) tests of intelligence or the all-round cognitive ability to acquire knowledge and skills ; (2) test of special abilities or aptitudes that constitute an individual's potentialities to show achievement in some special areas of activities or behaviour ; 3) test of interest or the likes or dislikes, attractions or repulsions, shown by an individual to special objects, activities or situations : (4) tests of personality or the typical modes of adjustment to social and emotional situations characteristic of a person, and (5) tests of attainment or the knowledge and skills acquired and the accomplishments made by an individual as a result of formal or institutional training.

Any test, whatever its type or nature, can recommend itself as a valuable guidance tool only when it is known to possess three characteristics : (a) Validity (b) Reliability and (c) Practicability.

(a) A test must be valid. It must in fact measure the characteristic it is intended to measure. For example, a paper and pencil test of sociability is valid only when a person who scores high in the test is actually found to be one who feels at home in social situations, can get along well with people, is able to influence other persons, and so on. A test of intelligence is not valid when it is noted that persons exposed to special opportunities for learning and experience score better in the test than those who are deprived of similar benefits. The test fails to measure what it is intended to measure, namely, the all round native ability or potentiality that accounts for difference in the achievement of persons exposed to similar experience and similar opportunities to learn. .

To determine the validity of a test we need a criterion of the characteristic the test intends to measure. This criterion provides another evidence of the characteristic and a correspondence between the test and the criterion is an index of the test's validity. For example, teachers' estimate of the inherent ability of their pupils which is based on their observation of the pupils' behaviour may be used as a criterion for determining the validity of a test of intelligence. The correspondence between a test and the criterion is determined by the statis-

tical method of correlation and is expressed by a single quantitative value, called the co-efficient of correlation. This value ranges between 0 and 1 ; 0 expresses total lack of correlation and 1 expresses perfect correlation. The intermediate values are more than 0, but less than unity and are thus expressed as fractions of 1. The maximum correlation that may be obtained between a test and a criterion seldom exceeds .7 and is generally expected to be in the neighbourhood of .5.

The validity of a test gives an estimate of the predictive value of the test. In a guidance programme the use of a test for measuring any characteristic of a person is not merely to define his status in respect of that characteristic at the time of the test. The purpose is to foresee his future behaviour on the basis of the measurement of his characteristic at the present moment. For example, if a child's tested intelligence is found to be high, this knowledge should enable one to predict that the child's future achievement in his school programme is also most likely to be high. If the test possesses validity, the prediction would generally come to be true. On the other hand, if the prediction is found to generally fail, the test's validity would be questionable.

Besides predictive validity, there are other types of validity too, mentioned in the literature (18 ; 30). But these are not of much importance for guidance. Hence their discussion is omitted.

(b) A test must be reliable, that is, the test should consistently measure whatever it measures. A test is not reliable if the same person obtains quite a different score when tested at another time under similar conditions. An intelligence test is not reliable when persons who got high score in the test get low score and those who got low score get high score, when retested.

There may be several causes of unreliability or error in a test score. The causes may be reduced to three broad types:—
(i) those pertaining to the environment in which the test has been given ; (ii) those pertaining to the condition of the testees; and (iii) those pertaining to the test itself. Inadequate ventilation, insufficient lighting, improper seating arrangement may constitute important sources of error contributed by the environment, specially in a group test scores. A still more vital factor may be the tester. An amateurish, untrained, unskilled test administrator may be the sole cause for the unreliability of scores obtained in a test. Secondly, optimal physical and psychological state of the testee is necessary in order that the testing may yield reliable results. Faulty vision, defective hearing, headache, fatigue, nervousness, anxiety, fear may constitute sources of serious errors in test scores. But the most important personal factor is the level of motivation under which a person has taken the test. To yield a reliable result, the testee should become personally involved in the testing; he should genuinely strive to put his maximum effort in the test

performance if the test happens to be one of ability, aptitude or achievement. He should be extremely frank and truthful in responding to the test items, if the test is one of personality or interest. The third source of unreliability is a fault of the test itself. The directions for the test may not be definite and clear. The language of the test, if it is a verbal test, may be ambiguous and produce different meanings at different times. The method of scoring may not be objective so that the test responses may be interpreted in different ways and assigned different values at different times, or by different testers. A good and standard test is free from these internal sources of error, namely, faulty direction, ambiguous contents, and subjective scoring. By itself, it is a reliable instrument and should produce consistent results. Whatever error may arise in the test will be due to faulty, inexpert administration in unsuitable surroundings or the unfavourable state of the testees.

Like its validity, the reliability of a test is also expressed by a correlation value called the co-efficient of reliability, which may be obtained by diverse methods: (i) The test may be split into halves by keeping the odd-numbered items in one part and the even-numbered items in another part. The co-efficient of correlation may then be computed between the scores obtained by the testees in each half. An estimate of the correlation of the full test with itself is then made on the basis of the correlation between the half tests. This has been called the split-half, or odd-even reliability. (ii) The administration of the test may be repeated under similar conditions and the co-efficient of correlation may be found between the scores made by the testees in the two administrations. This has been called the repeat-test reliability. (iii) The test may have been originally constructed into two equivalent forms. The reliability of each form may then be estimated by administering both forms to the same group of persons, and computing the correlation between the scores on the two forms. This has been called two-form reliability.

The reliability co-efficient for an aptitude or achievement test should be in the neighbourhood of .9, otherwise the test may not be regarded as a good test. Similarly, the reliability of a test of personality or interest should not ordinarily be lower than .8. In any case, the reliability co-efficient for a test should always be higher than its validity co-efficient.

There is a relation between reliability and validity. A test cannot be valid unless it is reliable. Hence if the validity of a test is ascertained to be high, its high reliability may be presumed. But a test may be reliable without being valid. Hence a mere knowledge of the reliability of a test is not sufficient assurance for its validity. Its validity has also to be ascertained.

When looking at the report on the validity of a test, attention should be given also to the nature of the criterion. The criterion

may not be adequate to the use made of the test. For example, a medical student selection test may have been validated against the criterion of marks or grades made in examination in the medical course. Such a test cannot be used for predicting the success of a medical graduate in the medical profession where personality factors, like a kindly disposition, pleasing manners, readiness to undergo strain, patience, etc., are no less important than knowledge of medical facts and practices. To suit the purpose, the test must have been validated against a relevant non-intellectual criterion.

(c) *The test must be practicable.* A good test is one that can be easily administered and scored and is neither very costly nor very time-consuming. Some tests require specialised training on the part of the tester for satisfactory administration scoring and interpretation. The Binet test, for example, can be administered, scored, and interpreted only by one who has had a good training and considerable experience of the use of the test. On the other hand, most paper-and-pencil group tests of intelligence can be administered with but little practice, scored by the clerical staff or even a machine, and interpreted by any intelligent sophisticated person.

Some tests require very special materials or can be administered only individually, that is, to a single person at a time. Its cost is high and its administration expensive as it entails a good deal of time. A cheap, reliable and valid test that can be administered to a group of thirty to forty persons at a time and whose scoring can be done by some quick mechanical device, must recommend itself more strongly for a school or college guidance programme.

Uses and limitations of the test techniques (8 ; 1-8). Tests have a limited use. An intelligence test can be used in a school guidance programme for predicting a pupil's possibilities for higher education. If a pupil obtains fairly high scores in an intelligence test he may be considered to be a good risk for post-elementary or post-school education. Similarly, a school pupil who scores low in an intelligence test may be presumed to be a poor risk for college or University education. Lack of relationship between a pupil's all-round ability measured by an intelligence test and his school achievement, may strike the guidance worker as an educational adjustment problem which needs his special attention. Beyond these, intelligence tests have little value in a school guidance programme. They serve no purpose in the allocation of pupils to the diversified offerings of the school (9 ; 36-462). In vocational guidance also, intelligence tests have a limited value. They provide not much of a clue about the type of vocation—technical, clerical, literary, etc., for which a person is best suited. The test score can only enable us to predict how far up a person is likely to go in any

job that he enters (5 ; 52-62). For example, if he enters a technician's job in an iron and steel factory and is gifted with high level intelligence, he is quite likely to rise to the rank of a foreman and even shop manager, though all of these different jobs belong to the same, that is, technical family. Similarly, an office clerk with high level general ability might one day reach the position of a department secretary. With a low level intelligence he could not, perhaps, go beyond the rank of a routine clerk.

Aptitude tests also, like the tests of intelligence, have a limited value. They lend significant clues about the relative chances of a pupil in the several offerings of the school, or among a variety of jobs that he may consider. For example, a pupil with high scores in a battery of mechanical aptitude tests is likely to fare better in a course in engineering than commerce or fine arts. But even for this purpose, tests of aptitudes have not reached the level of perfection as a guidance tool that one may notice in a test of general intelligence. Their validity is generally low and standard tests of known value are available for measuring only a few aptitudes. In fact, tests of mechanical or clerical aptitude are the only ones about which adequate reliability and validity data are available and which can, therefore, be considered by the guidance worker. But even these tests do not provide enough information about the aptitude of a person to enable one to make prediction of success in a technical or clerical course or occupation, with a measure of confidence. For example, most paper-and-pencil tests of mechanical aptitude provide information about one's ability to perceive and visualise spatial relationship, about one's extent of knowledge of names and uses of tools and parts of machinery, etc. They do not throw sufficient light as to how best a person can make use of the spatial ability or mechanical information while actually working with tools or machines. Similarly, most clerical aptitude tests measure one's speed and accuracy of perception of minute details of letters, numbers and words. But except for the routine clerical jobs, most clerical work calls for other activities also which more strongly account for success ; for example, facility in the use of language, memory for details, reasoning and computational skill. It follows that high scores in a clerical aptitudes test can tell us little about a person's chances of success in other than the mere routine clerical jobs.

Interest and personality tests have still more limited value on account of their questionable validity. Both interest inventories and personality questionnaires are influenced by the factor of social desirability that prevents a person from presenting a true picture of his real interests, feelings, attitudes, and habit patterns when responding to test questions. Faking of responses is the common vitiating factor that lowers the validity of these tests. For this reason, objective observation of the actual likes and dislikes of persons in real life situations, or of the characteristic patterns of their behaviour while they are confronting social or emotional situations, is a much better

guide to the knowledge of their interests and personality traits than a test of interest or personality.

All tests have one very great drawback that reduces their value in guidance programme. Tests offer a good basis for the prediction of group behaviour : as a predictor of individual a test may utterly fail a guidance worker. But guidance is a service rendered to an individual. Thus the test techniques cannot serve as the sole basis of guidance. A guidance worker who puts too much reliance on test information may have to face, at times, severe disillusionment.

Some people think that testing and guidance are equivalent processes or that there can be no guidance without tests. Both views are erroneous. Guidance is a help rendered to a person to solve his adjustment problems and overcome his difficulties. The solution of a problem undoubtedly requires an understanding of the problem as well as of the abilities and characteristics of the individual. Tests may provide some relevant information. But tests cannot produce a solution to the problem. Much less can they motivate the individual to implement the solution. Tests have, thus, only a diagnostic value. They may tell us about the individual's abilities and traits, and the information may be also reliable and valid. But tests have no therapeutic value. They cannot remove the individual's difficulties, alter his patterns of behaviour, or correct his misconceptions about himself or his environment.

A good guidance programme may be organized even without using any tests. There are other techniques of gathering personal data, besides testing, which are discussed below. A careful use of these techniques may yield all the relevant data. In fact, the tests now available furnish only information regarding ability, aptitude, achievement etc. They do not furnish complete data. They give little information about drive, motivation, persistence and similar factors that are highly significant for success or failure of adjustment to any situation. Further, they may not give a true account of the person's disposition and behaviour shown in an actual life situation. In order to check their validity, we have to depend upon data furnished by the non-test techniques also.

Nevertheless, tests are to be recommended in a guidance programme. They are very handy and are economic methods of collecting information. Most tests used in a guidance programme, being administered to a group of persons at a time and, generally, a test does not take more than an hour to administer. Further, they are objective and uninfluenced by the personal judgement or opinion of the tester; a test always yields the same information irrespective of the person administering the test. Tests also provide significant means of comparing individuals, as tests yield quantitative results. They give an index of the relative strength or weakness of an individual.

2. *Observational Techniques.* The observational techniques involve the observation of a person's behaviour in real situations for the purpose of assessing the strength or weakness of his several characteristics. The behaviour occurs in natural setting and is observed without the behaving person's knowing that he is being observed. The basis of the assessment is, thus, the behaviour that characterises a person when he acts in his normal way, that is, without any reservation, restraint, or artifice.

There are several observational techniques. The two most often used are discussed below.

(i) *The Rating scale.* Rating is a process of expressing the impression one forms about some well-defined characteristic of another person on the basis of observation of his behaviour in a number of similar situations. It is important that the rater should have a clear notion of the trait or characteristic that he is rating. For example, if a person is being rated on the trait of sociability the rater should first decide whether he means by sociability one of several qualities like knack for making friends, the capacity to adjust to social situation, the ability to make oneself socially effective, or all of these taken together. The rater should have also had the opportunity of having fair acquaintance with the person who is rated and of having observed him in the situations wherein the trait in question is likely to be manifested.

Rating as an observational technique is to be taken to consist of the expression by one person, the rater, of his opinion about another person, the ratee; when the same person expresses his own judgement on his thoughts, feelings, attitudes, aspirations, characteristic behaviour pattern, etc., the process is to be called self-rating and becomes analogous to the questionnaire method of personality measurement. The basis of the judgement is subjective observation or introspection. Rating, as we use the term here, presupposes objective observation.

Rating may be done in several ways but the most convenient and hence, widely used, method of rating is the so-called rating scale method. In this method, the trait or characteristic is viewed as a continuum and is represented by a line. The line is divided into a number of equal parts and may be either horizontal or vertical. Each part is called a point or a step. The rating scale is described as a five-point scale, a seven-point scale, a nine-point scale etc., according to the number of the divisions. Each point or step stands for a magnitude or degree of the trait, increasing or decreasing in order from the left to right. Each step is, further, given a description which may consist of symbols like A, B, C, D, etc. Or, the description may be a clear statement of the degree, amount, or level of the trait used in the scale. For example, the trait of energy, or application, may be represented by a scale with a precise description of each step:

1	2	3	4	5
Very high energetic Maximum	Highly energetic. Applies himself.	Energetic. Average Application	Low energy. Has to be prodded	Very low energy. Sluggish

The steps may also be assigned numerical values which increase or decrease in equal units from left to right. The rating obtained by a person may thus be expressed by a score. This facilitates the comparison of individuals in respect of the rated trait and also makes statistical treatment possible.

A problem has been raised regarding the optimal number of steps in a rating scale. A scale with too few steps, say three, yields very coarse discriminations as it sets all ratings in only three groups. Differences that may probably exist between persons are lost when they fall in the same class. On the other hand, a scale with too many steps requires the rater to make very fine discriminations which he may not be capable of doing. Accordingly, he locates persons in different steps without being able to decipher the difference, so that no step may remain unrepresented. It is suggested that the optimal steps in a rating scale should be between 5 and 9. In rating a group of persons on a common trait the rater first locates those persons who, in his judgement, fall at the extreme ends of the scale. He then locates those who fall half way between the extremes. The positions of other persons are then determined according as they fall midway between one of the extremes and the mid point of the scale. Similar classifications may be made by locating a person at a point which is nearer either to the extreme or to the middle position. It follows, that an odd number of steps will be more amenable to such procedure in rating as compared to an even number. Hence, rating scales have odd-numbered points, like 5, 7, 9, etc.

There are some pitfalls or errors of rating which have to be avoided in order to make the rating valuable. One such error is called the error of central tendency. Some raters are strongly inclined to displace their ratings in the direction of the midpoint of the scale. They generally give average rating. Such ratings have little value as they fail to bring out individual differences and, thus, fail to indicate the relative strengths and weaknesses of persons who are rated.

Some raters are liable to what has been called "leniency error". They have a tendency to be very liberal in their rating and locate persons generally near the favourable end of the scale. Others show the opposite tendency of placing people generally near the unfavourable end of the scale. Such ratings become lopsided and the real purpose of the rating is lost. Rating is done to express differences between persons in respect of some characteristic. This is possible when persons differing in the amount or degree to which the characteristic is manifested by them are precisely located at different positions.

are available, a comparison may reveal very interesting facts. Lack of relationship may be noted between how the person views himself and how other unbiased judges view him. Persons who are disposed to neurotic behaviour show a large gap between their concept of the self and the real self. Such persons need very special help which, given early, may prevent the development of marked pathological behaviour in future.

(ii) *The Autobiography.* This is a technique which can be most conveniently employed in a school guidance programme as a part of exercise in language composition. The pupil is asked to write his own story in a chronological order. He makes a narration of the important events of his life from the beginning to the time of the writing of the account. The narration throws ample light upon the peculiarities of his circumstances, his family background, his feelings and attitudes about himself and about others. If good rapport is established and the confidence of the pupil has been secured, much of the information contained in the autobiography is expected to be correct. Since the narration is free or uncontrolled, many facts come to light that would have remained, otherwise, unknown to the guidance worker.

Even when a pupil tries to make up a story about himself by fabricating detail in order to present himself and his life circumstance in an agreeable light, the narration does not lose its value. The facts stated may be found to be incorrect or exaggerated when compared with the information gathered from other sources. A consistent trend to compensate for his weakness and shortcomings may be noticed. Further enquiry may reveal a thwarted need he is trying to compensate. A new light is then thrown on his attitude and behaviour as observed by his teachers and brought to the knowledge of the guidance worker. The autobiography, thus, not only adds to the information obtained from other sources but also, sometimes, helps in the interpretation of the information.

4. *Miscellaneous Techniques.* In this category we may mention two techniques:—(i) Sociometry, and (ii) Fact finding Interview.

(i) *Sociometry.* It is a method of ascertaining the positive or negative reactions that a person evokes in other persons of the group to which he belongs (18). We can know by this method whether a person is accepted or rejected, liked or disliked by others, or others fail to take notice of him or he produces no reaction in them. The device is very simple. Each pupil is asked to name in order of preference three of his class-mates with whom he would like to be in the same situation or participate in the same activity. The pupil may also be asked to name the pupil with whom he would not like to work or participate. For example, the pupils may be asked to write the names of those of their classmates with whom they would

prefer to share the same desk, to work in the same committee, or to go for an excursion. Each pupil may be supplied a piece of paper on the top of which he writes his own name and then writes three other names he would like to join, numbered in order of preference from 1 to 3. On the reverse side of the paper, he writes the name of the pupil whom he would not like to join. The papers are collected and the data, thus obtained, are tabulated. The frequency of acceptance or rejection of each name is counted. It may be noticed that among the names preferred or rejected, a few are quite often included, while a few are seldom included. The names that get a fairly large number of acceptances will be called stars (S) or leaders. Those that get fairly large number of rejections will be called Enemy (E). The names that are seldom mentioned will be called Isolates (I).

A diagram of the results, called sociogram, may also be plotted to show the patterns of acceptance or rejection as a whole (4; 68-78).

In order that the acceptance or rejection indicated by the pupils expresses their true attitudes and feelings, it is necessary to secure the pupils' confidence. They should be convinced that their responses would be held confidential. Further, they should also be made to feel that their wishes would be carried out as far as practicable when an actual situation arises.

The data furnished by the sociometric method are extremely valuable in the guidance programme. The identification of the "isolate" is of singular importance. He is generally a shy, withdrawing and meek pupil who can make neither a friend nor an enemy. Such pupils are ordinarily unnoticed by the teacher as they cause no annoyance to him. But such pupils, perhaps, need no less care and attention than the pupil who is boisterously aggressive and quite often offends the teacher. The teacher may discover, on probing further, that the lone child is suspicious or afraid of society, he lacks courage and self-confidence, feels like a fish out of the pond on account of excessive dependence on the family, or considers himself an out-caste or 'different' from other pupils in the class on account of poverty, or social disparity. Left to grow in this state, the development of the pupil will be highly lopsided. He may become an introvert, shut-in type, or a social misfit.

The discovery of the 'Star' is important for the teacher in organising activities of pupils. The star is a popular leader; he enjoys the goodwill and confidence of pupils. So, the teacher can trust him with any responsibility that could be given to him. The counselor may also use this knowledge when helping the pupil with a problem of vocational preparation or choice. Some vocations make a heavy demand upon the qualities of sociableness, co-operativeness and leadership. If other requirements are satisfied, the pupil may, perhaps, be best suited for such vocations.

The 'enemy' needs special counselling by the guidance worker. He is a specially maladjusted pupil and a modification of his attitudes and behaviour has to be sought for before it is too late to correct him.

(ii) *Fact-finding Interview.* The interview is a face-to-face relationship between the interviewer and the interviewee. When the interview is used for fact finding, it serves as a most direct method of gathering personal data. The source of the data is the person concerned who is in front of the interviewer, so that the latter can put any question to him regarding any matter and get clarification of any fact which is otherwise vague or incomprehensible. The interview, thus both supplements the data obtained by other methods as well as confirms those whose accuracy has not already been checked.

There is one essential condition precedent to the success of the interview. The interviewer should have secured the trust and confidence of the interviewee. He should have established a 'rapport' with the pupil. Rapport signifies a relationship of cordiality, warmth and responsiveness which will break the resistances within the interviewee and induce him to make a free, frank and truthful statement of all facts about himself and about those that matter for him. Rapport is a state of psychological nearness or intimacy with the interviewee conditioned by the removal of the barrier that separates two persons in spite of the physical closeness that they may have. As long as the rapport has not been established, the interviewee responds in the interview situation with reservation and restraint; he is constantly on guard in letting himself out before the interviewer and suppresses many facts and distorts others. The information gathered from the interview, consequently, lacks completeness and even correctness. Once rapport is established, a spontaneous and free narration of all significant facts about the interviewee and his condition follow and a host of facts hitherto cautiously guarded by the interviewee come into the open.

The establishment of rapport depends upon a number of conditions (7; 51-55). The interviewer should have respect for the interviewee. He must have faith in the personal worth and value of the interviewee. He must be inspired by a genuine desire to help the interviewee and should prove to be sincere and true to him. The manner shown by the interviewer should testify to his genuine regard and feeling of courtesy for the interviewee. During the interview, he should never be impatient of listening to the interviewee's narration with interest and unflagging attention. He should remain uninfluenced by the tendency to judge or criticise and should always be disposed to understand and accept whatever the interviewee is communicating to him.

IV. COUNSELLING

We discussed the nature of the interview as a method of gathering personal data. When the interview is used for the purpose of helping a person to work out the solution of his problem it is called counselling interview. Counselling as a guidance service is the process of helping a person with his adjustment problem in the face-to-face situation of the interview.

Like the fact-finding interview, the first essential of the counselling interview is the establishment of the rapport. The counsellor should secure the trust and confidence of the counsellee by showing courtesy and respect for him. He must give indication of a genuine desire to help the counsellee and must be really sympathetic and sincere to him. He must be eager to understand and accept the counsellee despite his faults and shortcomings.

The counsellor should behave, during the interview, as a calm and patient listener and should generally avoid asking questions. When a question has to be put, it should be direct and straightforward and its purpose should be either to obtain more facts or to seek clarification of the counsellee's statement. The method of putting tricky questions or cross-questions should never be used. The counsellor should never ask questions that create the impression he wants to probe into the counsellee's private life.

The counsellor should maintain a perfect control over his feelings during the interview. His gestures and facial expressions should always present an air of agreeableness. There should be no indication of disapproval, contempt, or disagreement even when the counsellee says or does something that is not in keeping with the counsellor's standards of value and conduct.

Besides the psychological atmosphere of the interview, the physical setting of the interview also matters for its success. Privacy is very important for the counselling interview; hence, the interview should be conducted in a small quiet room which should preferably not be used for any other purpose. The room should bear an indication to prevent any visitor from entering while the interview is going on. It should contain only a few articles of furniture and should not create the impression of a store room. The table at which the counsellee is to sit should be clean and the room should be tastefully decorated. The room should possess a cosy atmosphere which is conducive to a feeling of at-easeness and freedom from tension in the counsellee.

The duration of the counselling interview should not be long. A session that lasts for thirty to forty minutes is to be treated as fairly good in general practice. However, a shorter or a longer session is not altogether ruled out. No session should be abruptly

terminated ; the counsellor should not get an impression that the counsellor values his time more than the counsellor's affair.

A code of conduct should be strictly observed by the counsellor. He should guard himself against disclosing any fact that he comes to know about the counsellor in the course of the interview. Further, he should be able to resist all temptations to utilize the information gained for any other purpose. The counsellor should always prove himself worthy of the trust and confidence the counsellor has placed in him.

There are two approaches to counselling method which appear to be very distinct and, therefore, deserve special mention :

(1) Directive counselling (19) and Non-directive counselling (14).

Directive counselling According to this method the counsellor has to make a previous preparation for the counselling interview. He collects facts about the counsellor and his circumstances, for which he makes use of various techniques and sources of information. He analyses the facts, disentangles and classifies them. He then synthesises and integrates the facts, views their inter-relatedness. He formulates or diagnoses the counsellor's problem, ascertains the precise nature and causes of the problem in the light of the synthesis. He finally makes the prognosis by viewing the various possibilities or plans of action open to the counsellor and determines the one that in his judgement is most adapted to the counsellor's problem.

Having achieved a full understanding of the counsellor's problem and having considered its appropriate solution, the counsellor meets the counsellor for the counselling interview. He establishes rapport with the counsellor by showing courtesy and consideration to him, by being "personal in his manners and impersonal in his interest" (19; 226). He then places before the counsellor the relevant facts from his diagnosis. His aim is to enable the counsellor to cultivate self-understanding. While marshalling the facts and explaining and interpreting them, the counsellor adopts a method that aims at creating conviction in the counsellor's mind. The counsellor is made not only to appreciate the counsellor's logic, but also to accept the facts and their interpretation. In placing the evidence that leads to his diagnosis, the counsellor does not proceed faster than the counsellor can comprehend. He also strives to translate his diagnosis of the counsellor into a language that suits the counsellor's level of intelligence and understanding.

When the counsellor has achieved an understanding of facts about himself and acceptance of the diagnosis to which they lead, the counsellor advises with the counsellor the appropriate plan of action. He places before the counsellor the alternative possibilities and considers the points for and against them. He emphasizes the importance for the counsellor to reconsider his goals and purposes in the light of the diagnosis of his problem. The counsellor, however,

does not urge upon the counsellee to accept the solution the counsellor has worked out. But he directs the thinking of the counsellee to the acceptance of the plan of action that the counsellor judges to be fitted to bring a solution of the counsellee's problem. The counsellor does not decide for the counsellee, but he leads him to the decision which in the judgement of the counsellor is the right course of action for the counsellee.

The counsellor helps the counsellee in the implementation of the plan of action. He also follows-up the future progress of the counsellee with the plan and makes himself accessible to the counsellee when the counsellee encounters further difficulty of adjustment.

(ii) *Non-directive Counselling* : This method of approach presupposes no previous preparation for the interview. The counsellor meets the counsellee for the first time when the counsellee calls on him in a state of anxiety, worry or tension. The counsellor tries to bring about such conditions in which the counsellee can make a free narration of his problem and of his feelings and attitudes concerning himself, his situation, or other persons. He provides the counsellee a complete freedom to unburden himself, to relieve himself of the emotions and feelings that he has been suppressing from others.

The permissive atmosphere of the counselling interview is created by the attitude of respect and courtesy, of understanding and acceptance, shown by the counsellor. The counsellor manifests his eagerness to listen to the counsellor's narration of his problem and condition without losing patience and interest. He shows appreciation and acceptance of whatever statement is made by the counsellee. The counsellor does not question, judge or criticise anything that the counsellee communicates to him. He tries to see the counsellee and his problem in the manner as the counsellee sees himself and his problem. He makes genuine attempt to appreciate and understand the counsellee's point-of-view, his internal frame-of-reference.

The permissive atmosphere of the interview weakens the forces that have been preventing the counsellee from obtaining a true picture of his own feelings and attitudes, his thoughts and aspirations. He is relieved of the weight of repression that has been damping his urge for self-expression. In the permissive atmosphere of the counselling situation he can bring into the open and hold before his view such mental contents that were withheld from his consciousness because of the feelings of guilt and shame associated with them. He gets a new perception of himself. He is able to see himself and the world of objects and persons affecting him in a new light. He achieves insight and self-understanding. He can now see both his weaknesses and his strengths in their true colour. His concept of self undergoes a change and comes nearer to his real self. He is

provided an insight into the real causes of his behaviour and attitude. He regains the power to work out a solution of his problem.

The aim of the non-directive counsellor is not to advise the counsellee with the solution of his problem. The counsellor is not to make a diagnosis of the counsellee's condition and urge upon him the right course of action. His object is to create an atmosphere wherein the counsellee can achieve freedom from the forces that are impeding his growth to maturity and independence. The counsellor has a faith in the counsellee's power to assume full responsibility for his life and conduct, and to work out the solution of his own problems. All that he has to do is to create conditions that are favourable to the counsellee's making use of his own resources in achieving his goals and purposes.

In a school guidance programme, the counsellor may be required to use both approaches to counselling. He may take to directive counselling when dealing with the routine problems of educational or vocational guidance, for example, guidance in matters of selection of courses of studies, or choice of a vocation, etc. The counsellor analyses the characteristics of the counsellee and leads him to decide upon a programme of action whose requirements are in keeping with his abilities and interests.

The counsellor has to lean on the non-directive approach when the counsellee's problem is emotional. The counsellee comes to seek the counsellor's help in a state of strong anxiety and tension. He is assailed by doubts and uncertainties, feelings of guilt and shame. He is overwhelmed by attitudes of self-inadequacy, shyness and timidity. All that he needs is an atmosphere for the free expression of his attitudes and feelings and the development of insight and self-understanding. The counselling should enable him to view his problem from a new angle, to get a new perspective about himself and his situation. The modification of his emotionalised attitudes, and a reorganisation of his goals and values would result in a change in his personality. He would have restored to himself a feeling of well-being and satisfaction.

Non-directive counselling is specially appropriate to the situation where a modification in the attitudes and values of the counsellee would bring about the desired result, what has been earlier called autoplasmic adjustment (P 445). Either the environment is too potent to be altered for the satisfaction of the individual's goals and purposes, or the goals and purposes themselves are unrealistic and the individual's notion of his self is out of harmony with his real self—the person that he actually is. A reorganisation of the personality can alone bring about adjustment. The individual's attitudes and feelings have to undergo a change. His system of values has to be modified. He has to learn new patterns of behaviour and substitute them for his old habits and ways of action. Advice, persuasion,

appeal to reason—the tools of directive counselling, would be ineffective to bring a change in his personality—his drives and urges, his attitudes and feelings, his goals and purposes. Non-directive counselling may alone produce this outcome.

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